UNITED STATES
AIR FORCE

OCCUPATIONAL SURVEY REPORT

DENTAL LABORATORY CAREER LADDER

AFSC 4Y1X1

AFPT 90-982-010

AUGUST 1994

OCCUPATIONAL ANALYSIS PROGRAM
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON
AIR EDUCATION and TRAINING COMMAND
1550 5th STREET EAST
RANDOLPH AFB, TEXAS 78150-4449

DISTRIBUTION FOR AFSC 4Y1X1 OSR

	OSR	ANL EXT	TNG EXT	JOB INV
AFOMS/OMDQ	1			
AFOMS/OMYXL	10		5	10
AL/HRMM	2			
ARMY OCCUPATIONAL SURVEY BRANCH	1			
CCAF/AYX	1			
DEFENSE TECHNICAL INFORMATION CENTER	2			
HQ ACC/DPTTF	3		3	
HQ AETC/DPAEE	3		3	
HQ AFC4A/RMPP	3		3	
HQ AFMC/DPUE	3		3	
HQ AFMPC/DPMRAD2	1			
HQ AFMPC/DPMYCO3	2			
HQ AFSOC/DPAPT	3		3	
HQ AFSPACECOM/DPAE	3		3	
HQ AIA/DPAT	3		3	
HQ AMC/DPAET	1			
HQ PACAF/DPAET	3		3	
HQ USAF/SGHP (170 LUKE AVENUE, STE 400, BOLLING AFB DC 20332-5113)	1		1	
HQ USAFE/DPATTJ	3		3	
NODAC	1			
STANDARDS BRANCH	1			
882 TSS/TSOXA (939 MISSILE ROAD, SHEPPARD AFB TX 76311-2260)	3	1	3	3
381 TSS/DTLB (917 MISSILE ROAD, SHEPPARD AFB TX 76311-2246	1		1	

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS
(Tables, Figures, Appendices)

TABLE OF CONTENTS (CONTINUED)
(Tables, Figures, Appendices)

PREFACE

This report presents the results of an Air Force Occupational Survey of the Dental Laboratory career ladder (AFSC 4Y1X1). Authority for conducting occupational surveys is contained in AFI 36-2623. Computer products used in this report are available for use by operations and training officials.

Chief Master Sergeant Jeffrey L. Milligan, Inventory Development Specialist, developed the survey instrument. First Lieutenant Trevor D. Staiger, Occupational Analyst, analyzed the data and wrote the final report. Mr. Wayne Fruge provided computer programming support, and Mr. Richard G. Ramos provided administrative support. Major Randall C. Agee, Chief, Airman Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS), reviewed and approved this report for release.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to AFOMS, Attention: Chief, Occupational Analysis Flight (OMY), 1550 5th Street East, Randolph AFB Texas 78150-4449 (DSN 487-6623).

RICHARD C. OURAND, JR., Lt Col, USAF
Commander
Air Force Occupational Measurement Sq

JOSEPH S. TARTELL
Chief, Occupational Analysis Flight
Air Force Occupational Measurement Sq

THIS PAGE INTENTIONALLY LEFT BLANK

SUMMARY OF RESULTS

1. *Survey Coverage*: The Dental Laboratory (AFSC 4Y1X1) career ladder was surveyed to obtain data needed to update AFMAN 36-2108 Specialty Training Standards (STS), Career Development Courses, Specialty Knowledge Tests, and the training courses. Survey results are based on 399 responses from AFSC 4Y1X1 personnel, which constitute 71 percent of the assigned population.

2. *Specialty Jobs*: Structure analysis identified one job cluster and seven jobs: Base Dental Lab cluster, Orthodontic Appliance Fabricator job, Fixed Restoration Fabricator job, Crown Fabricator job, Area Dental Laboratory (ADL) Ceramic Prostheses Fabricator job, Removable Partial Denture (RPD) Fabricator job, Supply job, and Dental Laboratory NCOIC and Superintendent job. Clusters and jobs are discussed within this report.

3. *Career Ladder Progression*: Personnel in the Dental Laboratory career ladder show a typical pattern of career progression. Three-skill level personnel perform essentially technical tasks. At the 5-skill level, a moderate shift towards supervisory functions occurs, with members still spending more than 85 percent of their job time performing technical duties. Seven-skill level personnel spend 35 percent of their duty time performing managerial and supervisory functions, showing an increase in responsibility as a result of experience. Specialty descriptions in AFMAN 36-2108 provide a broad and accurate overview of tasks and duties performed within the career ladder.

4. *Training Analysis*: A match of survey data to the AFSC 4Y1X1 STS identified 12 entries on the STS not supported by survey data. In addition to this, a similar match of data to the Plan of Instruction (POI) for the J3ABR4Y131-004 course revealed that seven POI learning objectives are not supported. Career ladder functional managers and training personnel should carefully review these unsupported STS and POI entries to justify their continued inclusion in the training documents.

5. *Job Satisfaction Analysis*: No serious job satisfaction problems appear to exist within this specialty. Overall, job satisfaction responses were slightly higher than those of a comparative sample of similar Air Force personnel surveyed in 1993.

6. *Implications*: The AFSC 4Y1X1 career ladder structure identified in this report is similar to that found in the 1988 Occupational Survey Report. The AFMAN 36-2108 Specialty Descriptions accurately describe the jobs and tasks performed by personnel at all skill levels, and overall satisfaction was positive for the jobs identified.

THIS PAGE INTENTIONALLY LEFT BLANK

OCCUPATIONAL SURVEY REPORT (OSR)
DENTAL LABORATORY CAREER LADDER
(AFSC 4Y1X1)

INTRODUCTION

This is a report of an occupational survey of the Dental Laboratory career ladder conducted by the Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS). This survey was conducted in order to provide current data for routine updating of the career ladder training programs. The last survey pertaining to this career ladder was published in August 1988 (AFSC 982X0).

Background

As described in the AFMAN 36-2108 Specialty Descriptions for AFSC 4Y131/51/71, 3- and 5-skill level members fabricate and repair both dental and maxillofacial prostheses and appliances. This includes procedures to fabricate and repair complete dental prostheses; fixed and removable partial dental prostheses; individual crowns, inlays, pontics, splints, stabilizers, and space maintainers; using precious and nonprecious metals, acrylic resins, and porcelain as basic materials. Members also perform general dental laboratory administration tasks. These administrative tasks include: maintaining dental laboratory records; preparing reports on laboratory activities; and requisitioning, storing, and issuing dental laboratory supplies. It also includes accounting for expenditure of precious metals. They also perform inspections on dental lab operations and equipment. In addition, 7-skill members oversee the laboratory operations and provide technical expertise pursuant to fabricating and repairing: fixed and removable partial dental prostheses, complete dental prostheses, maxillofacial prostheses, and all other oral prostheses and mechanical devices.

Initial 3-skill level training for AFSC 4Y1X1 personnel is provided through a 23-week, 3-day course taught at Sheppard AFB TX. The Apprentice Dental Laboratory course, J3ABR4Y131-004, provides fundamental instruction for procedures accomplished in Air Force dental laboratories. That instruction includes training on: complete denture fabrication, acrylic base reline and repair, removable partial denture construction, crown and fixed partial denture construction, fabrication of orthodontic appliances, and specialized prostheses. Preventive maintenance and safety precautions for dental laboratory equipment are also stressed.

Entry into the career ladder currently requires an Armed Forces Vocational Aptitude Battery General score of 64 and a strength factor of G (40 lbs).

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory (JI) AFPT 90-982-010, dated June 1993. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, and tasks from the last AFSC 982X0 OSR. The preliminary task list was refined and validated through personal interviews with 35 subject-matter experts (SMEs) representing *MAJCOMs at the following locations*:

BASE	UNIT AND REASON FOR VISIT
Sheppard AFB TX	Technical Training School
Barksdal AFB LA	2 MEDGP (one of four area dental laboratories)
Keesler AFB MS	Keesler Medical Center (2-year dental residency program)
Lackland AFB TX	Dunn Dental Clinic *Mackown Dental Clinic* (largest dental residency program)
Dyess AFB TX	96 MEDGP (typical small dental laboratory)
Goodfellow AFB TX	391 MEDSQ (typical small dental laboratory)

The resulting JI contained a comprehensive listing of 407 tasks grouped under 14 duty headings. A background section requested information such as grade, job title, time in present job, time in service, job satisfaction, facility assigned to, job title, and a list of equipment utilized in the performance of the incumbent's job.

Survey Administration

From August through November 1993, Military Personnel Flights at operational bases nationwide administered the inventory to eligible AFSC 4Y1X1 personnel. Members eligible for the survey consisted of the total assigned 3-, 5-, and 7-skill level population, excluding the following: (1) hospitalized personnel; (2) personnel in transition for a permanent change of station; (3) personnel retiring during the time inventories were administered to the field; and (4)

personnel in their jobs less than 6 weeks. Participants were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Military Personnel Center.

Each individual who completed the inventory first filled in an identification and biographical information section and then checked each task performed in their current job. After checking all tasks performed, each individual rated each task on a 9-point scale showing relative time spent on that task as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of that member's time spent on the job and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percentage of time spent.

Survey Sample

Personnel were selected to participate in this survey to ensure an accurate representation across MAJCOMs and paygrades. Table 1 reflects the distribution percentages, by MAJCOM, of assigned AFSC 4Y1X1 personnel, as of July 1993. The 399 respondents in the final sample represent 71 percent of all assigned AFSC 4Y1X1 personnel. Table 2 reflects the distribution percentages by paygrade groups. The respondents are distributed proportionately across MAJCOMs and paygrades (see Tables 1 and 2 and Figure 1) and are somewhat representative of the assigned population. Assigned members in the United States Air Forces Europe were declining at the time the survey was being administered, due to the closure of a number of overseas bases. Many of those who have returned may have been assigned to Air Education and Training Command (AETC), which would account for the discrepancies noticed in Figure 1 and Table 1.

Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs. Task factor information is needed for a complete analysis of the career ladder. To obtain the needed task factor data, selected senior AFSC 4Y1X1 personnel (generally E-6 or E-7 technicians) also completed a second booklet for either training emphasis or task difficulty. These booklets were processed separately from the JIs. This information is used in a number of different analyses discussed in more detail within this report.

Training Emphasis (TE). TE is defined as the amount of structured training first-enlistment personnel need to perform tasks successfully. Structured training is defined as training provided by resident technical schools, field training detachments, mobile training teams, formal on-the-job

TABLE 1

MAJCOM REPRESENTATION IN SAMPLE

PERCENT OF COMMAND	PERCENT OF ASSIGNED	SAMPLE
ACC	31	32
AETC	23	29
USAFE	12	8
AMC	12	11
PACAF	11	11
AFMC	9	7
OTHER	2	2

TOTAL ASSIGNED = 565
TOTAL SURVEYED = 479
TOTAL IN SAMPLE = 399
PERCENT OF ASSIGNED IN SAMPLE = 71%
PERCENT OF SURVEYED IN SAMPLE = 83%

TABLE 2

PAYGRADE DISTRIBUTION OF SAMPLE

PERCENT OF PAYGRADE	PERCENT OF ASSIGNED	SAMPLE
E-1 TO E-3	18	17
E-4	31	32
E-5	29	30
E-6	13	12
E-7	7	7
E-8	2	2

MAJCOM DISTRIBUTION

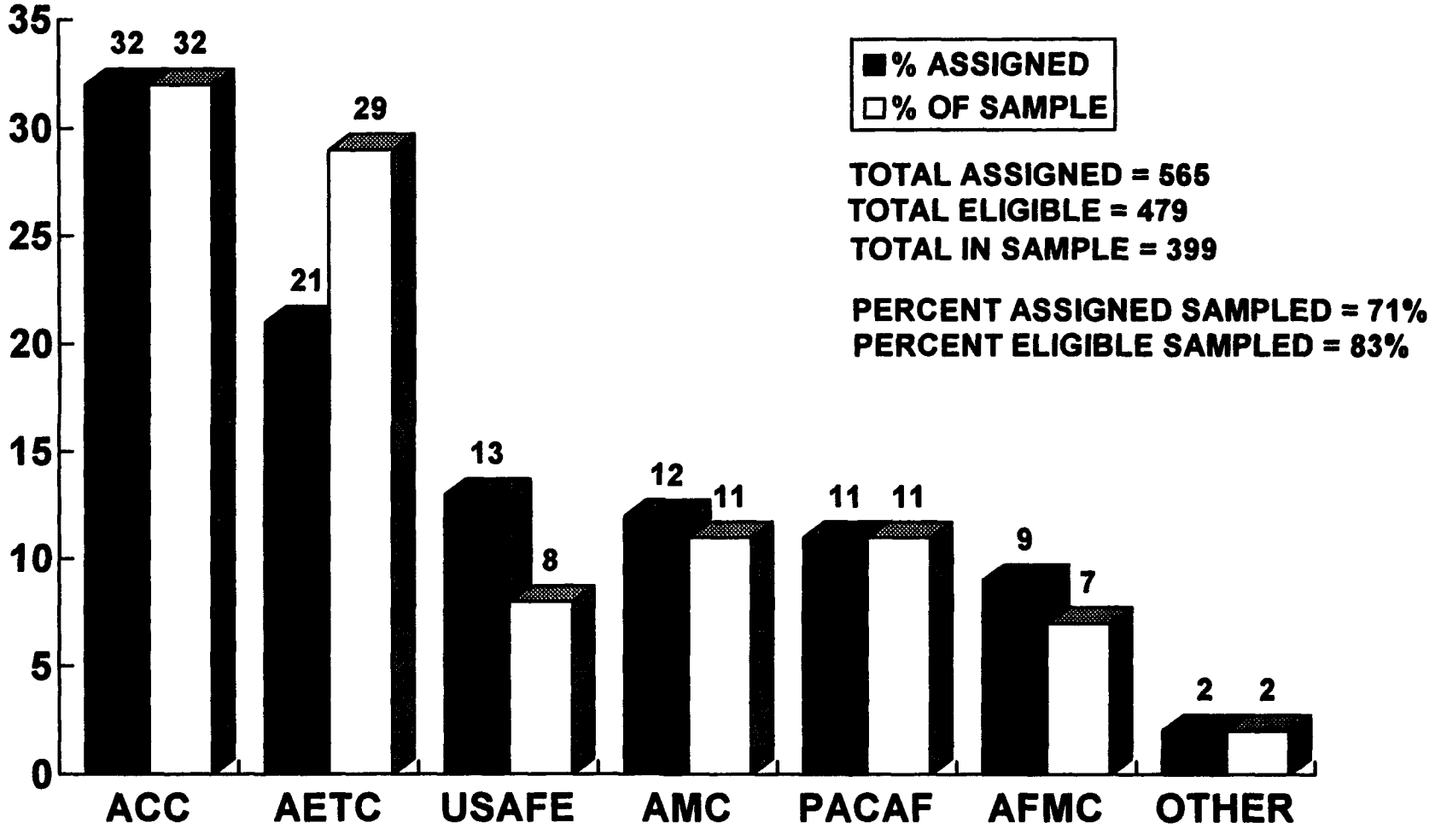

FIGURE 1

training, or any other organized training method. Thirty-eight Air Force dentists who supervise 4Y1X1 personnel, and 37 experienced NCOs rated the tasks in the inventory on a 10-point scale ranging from 0 (no training required) to 9 (extremely high amount of training required). The interrater agreement for these raters was acceptable. The average TE rating for AFSC 4Y1X1 was 2.97, with a standard deviation of 2.23. Any task with a TE rating of 5.20 or greater is considered to have a high TE. After separating and comparing the officer and NCO TE ratings, it was apparent that the combined interrater reliability was acceptable, and there were no differences in rating policies between the different groups.

Task Difficulty (TD). TD is defined as an estimate of the length of time the average airman takes to learn how to perform a task. Forty-one experienced AFSC 4Y1X1 NCOs rated the difficulty of the inventory tasks on a 9-point scale ranging from 1 (easy to learn) to 9 (very difficult to learn). Interrater agreement was again acceptable. TD ratings are normally adjusted so tasks of average difficulty have a value of 5.0, with a standard deviation of 1.0. Thus, any task with a TD rating of 6.00 or above is considered difficult to learn.

When used in conjunction with the primary criterion of percent members performing, TD and TE ratings can provide insight into first-term personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting AFS entry-level jobs.

SPECIALTY JOBS
(Career Ladder Structure)

The first step in the analysis process is to identify the structure of the career ladder in terms of the jobs performed by the respondents. Comprehensive Occupational Data Analysis Programs (CODAP) assist by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. The CODAP automated job clustering program then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and combines them to form a composite job description. In successive stages, new members are added to this initial group, or new groups are formed based on the similarity of tasks and time spent ratings.

The basic group used in the hierarchical clustering process is the job. When two or more jobs have a substantial degree of similarity in tasks performed and time spent on tasks, they are grouped together and identified as a cluster. The structure of the career ladder is then defined in terms of jobs and clusters of jobs.

Overview of Specialty Jobs

Based on the analysis of tasks performed and the amount of time spent performing each task, one cluster and seven jobs were identified within the career ladder. Figure 2 illustrates the jobs performed by AFSC 4Y1X1 personnel. A listing of these jobs is provided below. The stage (ST) number shown beside each title references computer-printed information; the letter ("N") stands for the number of personnel in each group.

I. BASE DENTAL LAB (BDL) CLUSTER (STG26, N=271)

II. ORTHODONTIC APPLIANCE FABRICATOR JOB (STG40, N=7)

III. FIXED RESTORATION FABRICATOR JOB (STG75, N=25)

IV. CROWN FABRICATOR JOB (STG33, N=11)

V. AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB (STG44, N=13)

VI. REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB (STG17, N=19)

VII. SUPPLY JOB (STG47, N=7)

VIII. DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB (STG35, N=21)

The respondents forming these groups account for 94 percent of the survey sample. The remaining 6 percent were performing tasks or series of tasks which did not group with any of the defined jobs. Some of the job titles given by respondents which were representative of these personnel include: Superintendent of ADL Administration, Technical School Instructor, Career Development Course Writer, and Superintendent of Training.

Group Descriptions

The following paragraphs contain brief descriptions of the one cluster and seven jobs identified through the career ladder structure analysis. Appendix A lists representative tasks performed by members with each job, Table 3 displays time spent on duties, and Table 4 provides demographic information for each job discussed within this report.

JOBS PERFORMED BY ALL AFSC 4Y1X1 PERSONNEL

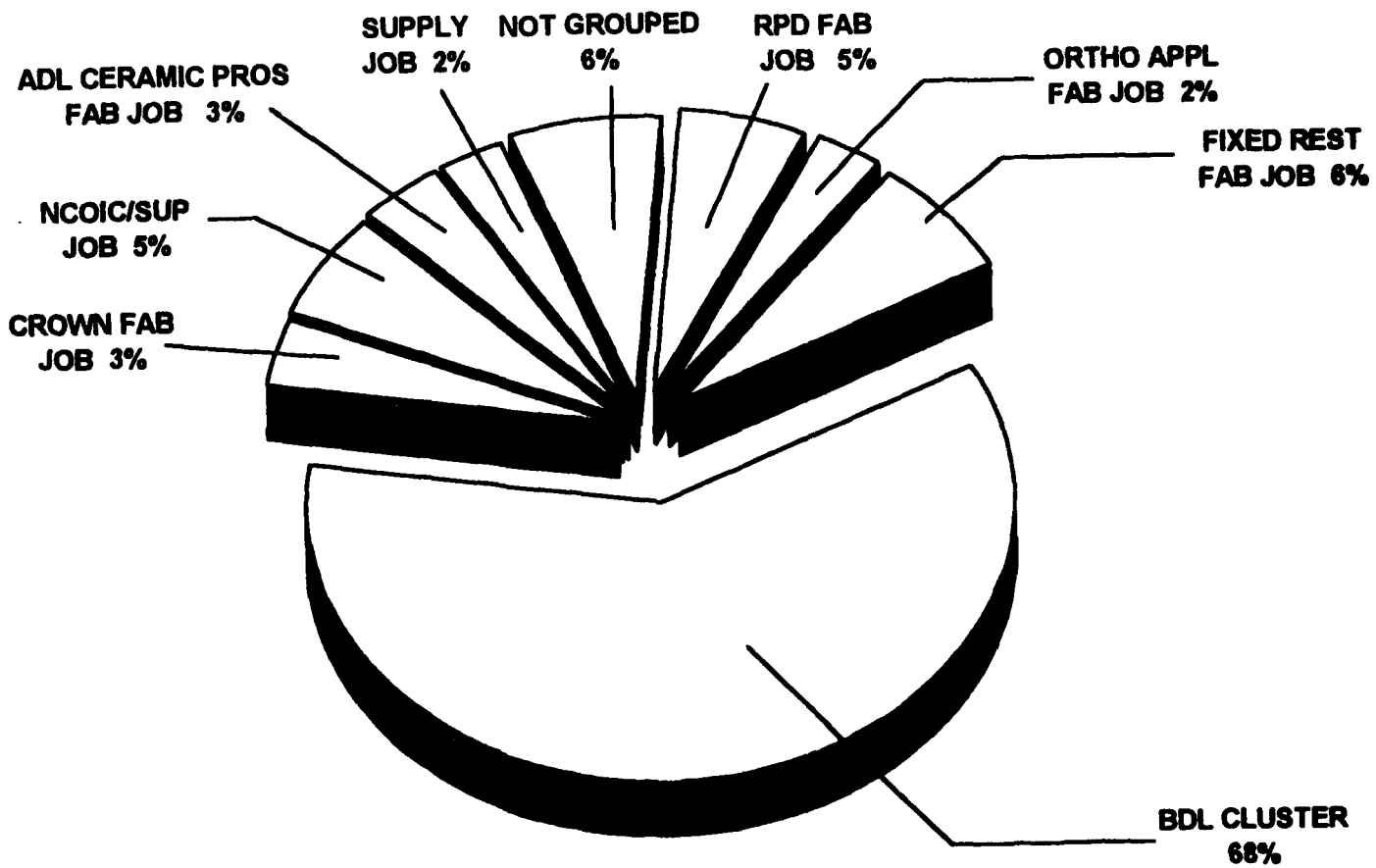

FIGURE 2

TABLE 3

AVERAGE PERCENT TIME SPENT ON DUTIES BY CAREER LADDER JOBS

DUTIES		BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
A	ORGANIZING AND PLANNING	3	*	1	1
B	DIRECTING AND IMPLEMENTING	3	1	3	2
C	INSPECTING AND EVALUATING	4	*	4	2
D	TRAINING	3	1	3	3
E	PERFORMING ADMINISTRATIVE ACTIVITIES	5	4	1	2
F	PERFORMING SUPPLY ACTIVITIES	3	*	1	-
G	PERFORMING GENERAL LABORATORY ACTIVITIES	27	62	14	8
H	FABRICATING DENTURE BASES	14	*	-	-
I	FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	1	1	-	-
J	FABRICATING FIXED RESTORATIONS	20	5	66	67
K	FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	8	*	*	1
L	FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	3	7	*	-
M	FABRICATING SPECIAL PURPOSE APPLIANCES	3	15	-	-
N	PERFORMING MEDICAL READINESS ACTIVITIES	3	4	7	14

* Denotes less than 1 percent

\- Denotes no response

TABLE 3 (CONTINUED)

AVERAGE PERCENT TIME SPENT ON DUTIES BY CAREER LADDER JOBS

DUTIES		ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)	RPD FABRICATOR JOB (STG17)	SUPPLY JOB (STG47)	DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)
A	ORGANIZING AND PLANNING	1	4	9	16
B	DIRECTING AND IMPLEMENTING	3	5	7	18
C	INSPECTING AND EVALUATING	4	3	11	22
D	TRAINING	3	4	7	10
E	PERFORMING ADMINISTRATIVE ACTIVITIES	2	4	8	10
F	PERFORMING SUPPLY ACTIVITIES	-	1	44	4
G	PERFORMING GENERAL LABORATORY ACTIVITIES	7	16	5	4
H	FABRICATING DENTURE BASES	-	3	1	1
I	FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	-	46	*	1
J	FABRICATING FIXED RESTORATIONS	9	2	5	9
K	FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	63	*	*	2
L	FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	-	1	*	*
M	FABRICATING SPECIAL PURPOSE APPLIANCES	-	*	*	*
N	PERFORMING MEDICAL READINESS ACTIVITIES	8	11	3	3

* Denotes less than 1 percent

\- Denotes no response

TABLE 4

SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
NUMBER IN GROUP	271	7	25	11
PERCENT OF SAMPLE	68%	2%	6%	3%
DAFSC DISTRIBUTION				
4Y131	25%	86%	44%	73%
4Y151	58%	14%	52%	27%
4Y171	17%	0%	4%	0%
4Y191/00	0%	0%	0%	0%
PAYGRADE DISTRIBUTION				
E-1 TO E-3	14%	86%	40%	46%
E-4	33%	14%	20%	27%
E-5	34%	0%	32%	18%
E-6	13%	0%	8%	9%
E-7	6%	0%	0%	0%
E-8	0%	0%	0%	0%
E-9	0%	0%	0%	0%
AVERAGE NUMBER OF TASKS PERFORMED	129	34	22	29
AVERAGE MONTHS TAFMS	105	31	71	71
PERCENT IN FIRST ENLISTMENT	24%	87%	44%	63%
PERCENT SUPERVISING	44%	0%	20%	18%

TABLE 4 (CONTINUED)

SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)	RPD FABRICATOR JOB (STG17)	SUPPLY JOB (STG47)	DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)
NUMBER IN GROUP	13	19	7	21
PERCENT OF SAMPLE	3%	5%	2%	5%
DAFSC DISTRIBUTION				
4Y131	30%	26%	29%	0%
4Y151	62%	63%	57%	14%
4Y171	8%	11%	14%	57%
4Y191/00	0%	0%	0%	29%
PAYGRADE DISTRIBUTION				
E-1 TO E-3	15%	16%	0%	0%
E-4	38%	37%	43%	0%
E-5	38%	32%	43%	19%
E-6	9%	15%	0%	19%
E-7	0%	0%	14%	38%
E-8	0%	0%	0%	19%
E-9	0%	0%	0%	5%
AVERAGE NUMBER OF TASKS PERFORMED	44	36	65	86
AVERAGE MONTHS TAFMS	85	89	106	196
PERCENT IN FIRST ENLISTMENT	30%	36%	0%	0%
PERCENT SUPERVISING	38%	42%	43%	100%

Another way to illustrate these jobs is to summarize tasks performed into groups of tasks (task modules (TMs)). This allows for a very concise display of where job incumbents spend most of their time and thus develops a comprehensive overview of each job. The display shows the number of tasks included in a module, the average percent time spent on that module, a cumulative amount of time spent on the listed modules, and finally, an average percent of members performing the particular TM. These modules were identified through CODAP co-performance clustering. Representative TMs are listed as a part of the job description. The list of modules with respective tasks is presented in Appendix B. Table 5 provides data showing the percent members performing within selected TMs from each job identified in the study.

I. BASE DENTAL LAB (BDL) CLUSTER (STG26, N=271). This is the core job of the career ladder, performed by 68 percent of the respondents. The overall mission of this job is to fabricate and repair dental prostheses to include crowns, inlays, and fixed partial dentures. Due to the small number of people working in the different BDLs, personnel must be generalists, as opposed to their more specialized counterparts who work in the ADLs. This is the broadest job in the career ladder, as personnel perform an average of 129 tasks. They spend more than 60 percent of their job time in three technical duty areas: performing general laboratory activities; fabricating fixed restorations; and fabricating denture bases. Representative tasks performed by members within this cluster include:

invest wax patterns
construct working casts with removable dies using Pindex-type systems
sprue wax patterns for fixed restorations
seat castings
finish and polish fixed restorations
recover castings
wax patterns for fixed restorations
cast conventional gold alloys
burnout wax patterns
perform user maintenance on dental laboratory equipment

As the core job of this specialty, incumbents include a broad range of experience levels, from tech school graduate through moderately experienced technician. The job is performed mostly by personnel in paygrades E-4 through E-6, holding the 3- and 5-skill level, and averaging slightly less then 9 years time in service.

This cluster contains two jobs which are distinguished from each other due to the different functions which they perform. The first job, Crown and Fixed Restoration, is highly involved with sprueing, burning out, and investing wax patterns for fixed restorations. In addition, personnel with this job also perform tasks such as seating castings, recovering castings, and casting conventional gold alloys for crown. The other job, Denture Base Fabricators, is similar to the

TABLE 5

AVERAGE PERCENT MEMBERS PERFORMING TASK MODULES BY CAREER LADDER JOBS

TASK MODULE		BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
0001	DENTAL LAB DOCUMENTATION	55	25	18	25
0002	GENERAL LAB MAINTENANCE	81	71	25	25
0003	FIXED RESTORATION FABRICATION	74	12	47	58
0004	FIXED RESTORATION SOLDERING	50	6	2	65
0005	PRECIOUS METAL DUTIES	57	-	2	11
0006	CERAMIC AND PORCELAIN DUTIES	53	-	-	1
0007	WAX PATTERN DUTIES	38	-	38	13
0008	ORTHODONTIC APPLIANCE FABRICATION	75	60	5	3
0009	DENTURE REPAIR AND FABRICATION	69	6	-	-
0011	MEDICAL READINESS ACTIVITIES	41	26	16	30
0012	DENTURE BASE FABRICATION	24	7	-	-
0013	WORKCENTER MANAGEMENT	35	-	14	16
0014	QUALITY ASSURANCE ACTIVITIES	28	1	2	2
0015	SUPERVISION DUTIES	12	-	1	-
0017	INSPECTION AND EVALUATION	17	-	-	-
0018	SUPPLY ACTIVITIES	27	-	2	-
0019	FINANCIAL MANAGEMENT	19	-	1	-
0020	FINANCIAL DOCUMENTATION	6	-	-	-
0022	CERAMIC FABRICATION	16	-	-	5
0024	CIVILIAN MANAGEMENT	5	-	-	-
0029	TRAINING PROGRAM MANAGERS	13	4	-	2
0031	REMOVABLE PARTIAL DENTURE FABRICATION	8	-	-	-
0032	METAL DENTURE BASE FABRICATION	3	-	-	-

- Indicates less than 1 percent

TABLE 5 (CONTINUED)

AVERAGE PERCENT MEMBERS PERFORMING TASK MODULES BY CAREER LADDER JOBS

TASK MODULE		ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)	RPD FABRICATOR JOB (STG17)	SUPPLY JOB (STG47)	DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)
0001	DENTAL LAB DOCUMENTATION	29	29	37	70
0002	GENERAL LAB MAINTENANCE	31	35	23	27
0003	FIXED RESTORATION FABRICATION	25	6	22	35
0004	FIXED RESTORATION SOLDERING	8	2	-	17
0005	PRECIOUS METAL DUTIES	8	-	37	18
0006	CERAMIC AND PORCELAIN DUTIES	94	-	10	22
0007	WAX PATTERN DUTIES	8	-	23	10
0008	ORTHODONTIC APPLIANCE FABRICATION	5	5	13	11
0009	DENTURE REPAIR AND FABRICATION	-	4	13	8
0011	MEDICAL READINESS ACTIVITIES	38	37	27	25
0012	DENTURE BASE FABRICATION	-	4	-	-
0013	WORKCENTER MANAGEMENT	24	19	27	83
0014	QUALITY ASSURANCE ACTIVITIES	5	6	12	71
0015	SUPERVISION DUTIES	5	11	6	61
0017	INSPECTION AND EVALUATION	4	4	18	45
0018	SUPPLY ACTIVITIES	-	1	98	22
0019	FINANCIAL MANAGEMENT	-	3	68	49
0020	FINANCIAL DOCUMENTATION	-	-	89	10
0022	CERAMIC FABRICATION	74	-	-	4
0024	CIVILIAN MANAGEMENT	-	3	-	35
0029	TRAINING PROGRAM MANAGERS	8	5	7	35
0031	REMOVABLE PARTIAL DENTURE FABRICATION	-	62	-	7
0032	METAL DENTURE BASE FABRICATION	-	34	-	4

- Indicates less than 1 percent

previous one; however, it is much more involved with denture base fabrication. Personnel spend more time performing such tasks as flasking and deflasking complete dentures or RPDs, finishing and polishing denture bases, and arranging artificial teeth.

Representative modules comprising the majority of job time for this cluster are listed below. Accompanying the TM numbers and the module titles are: (1) the number of tasks included in the module, (2) the sum of time spent by all members of the cluster performing tasks in the module, (3) the cumulative time spent by the cluster as each module is added, and (4) the average of the percent members performing all the tasks in each module. Refer to Appendix B to reference the tasks contained within each module.

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0003	FIXED RESTORATION FABRICATION	21	16	16	74
0009	DENTURE REPAIR AND FABRICATION	25	13	29	69
0008	ORTHODONTIC APPLIANCE FABRICATION	18	12	41	75
0006	CERAMIC AND PORCELAIN DUTIES	14	7	48	53
0002	GENERAL LAB MAINTENANCE	5	4	52	81
0005	PRECIOUS METAL DUTIES	5	2	54	57

This table clearly shows the emphasis of the general laboratory tasks in this cluster, along with the distinct job variations contained within the cluster.

II. ORTHODONTIC APPLIANCE FABRICATOR JOB (STG40, N=7). Members with this highly specialized job are responsible for the fabrication of special orthodontic appliances. Incumbents perform an average of 34 tasks which include fabricating athletic mouthguards, Hawley retainers, and bleaching stents. They also construct custom impression trays and diagnostic casts. This job is distinguished from that of the Base Dental Lab cluster by the amount of time spent on orthodontic appliance-specific tasks. The following are typical tasks members with the job perform:

fabricate athletic mouthguards
disinfect appliances
construct diagnostic casts, other than orthodontic study casts
construct custom impression trays for removable prosthodontics
fabricate bleaching stents
articulate using arbitrary mounting techniques
blockout undercuts on casts
bead and box impressions

Respondents holding this job are junior personnel, averaging only 3 years time in service. Six of the seven incumbents hold the 3-skill level, are in paygrades E-1 through E-3, and are in their first enlistment.

Some representative modules include the following:

TM	Module Title	No. of Tasks	Percent Time Spent Sum	Percent Time Spent Cumulative	Avg. Percent Members Perf.
0008	ORTHODONTIC APPLIANCE FABRICATION	18	39	39	60
0002	GENERAL LAB MAINTENANCE	5	13	52	71

The table clearly shows the emphasis of this group on laboratory maintenance and orthodontic fabrication. The module data clearly show the narrowly defined scope of this job, with the members spending more than 50 percent of their job time in only two modules.

III. FIXED RESTORATION FABRICATOR JOB (STG75, N=25). This job constitutes 6 percent of the total sample. Incumbents with this job spend most of their time performing tasks dealing directly with fabricating fixed restorations. This includes waxing, weighing, and investing patterns for fixed restorations and cutting back wax patterns for resin-veneer substructures. In addition, incumbents also report performing tasks directly related to the everyday lab activities such as disinfecting appliances and articulating using arbitrary mounting techniques. This is a very limited job as incumbents perform an average of only 22 tasks. What distinguishes this job from the Base Dental Lab cluster is the emphasis on tasks dealing specifically with fabricating fixed restorations. The following are typical tasks members with the job perform:

wax patterns for fixed restorations
wax metal-ceramic substructure patterns to full contour prior to cutback
fabricate fixed restorations using microscopes
weigh wax patterns prior to investing
invest wax patterns
cutback wax patterns for porcelain or resin-veneer substructures
sprue wax patterns for fixed restorations
articulate using arbitrary mounting techniques
fabricate surveyed crowns
attend continuing education sessions or courses

Respondents holding this job are relatively inexperienced personnel, averaging less then 6 years time in service and being primarily in paygrades E-5 and below. Fifty-two percent of the respondents hold the 5-skill level, while 44 percent hold the 5-skill level.

Representative modules for the Fixed Restoration Fabricator job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0003	FIXED RESTORATION FABRICATION	21	63	63	47
0007	WAX PATTERN DUTIES	5	5	68	38
0002	GENERAL LAB MAINTENANCE	5	5	72	25

This table shows that respondents within this job report that they spend 68 percent of their job time performing tasks related to waxing patterns and fixed restoration duties. In addition to their primary duties, members of this job also spend time performing the necessary lab maintenance tasks related to the job.

IV. CROWN FABRICATOR JOB (STG33, N=11). Members in this job represent 3 percent of the survey sample and are responsible for fabricating, soldering, finishing, and polishing crowns and all-metal fixed restorations. They spend 67 percent of their duty time performing the fabrication functions, which includes such things as seating castings, finishing substructures for porcelain applications, casting conventional gold alloys, recovering castings, and investing and burning out wax patterns. This is also a limited job, as members perform an average of only 29 tasks. Representative tasks for this job include:

seat castings
finish and polish fixed restorations
finish substructures for porcelain applications
assemble fixed partial denture components in matrices for soldering
fabricate fixed restorations using microscopes
solder all-metal fixed restorations
presolder metal-ceramic substructures
recover precious metal grindings or scraps
cast conventional gold alloys
cast metal-ceramic alloys

Respondents holding this job are junior personnel, averaging 6 years time in service. Sixty-three percent are in their first enlistment, and the predominant paygrades are E-1 through E-5. Seventy-three percent hold the 3-skill level, while 27 percent hold the 5-skill level.

The following are representative TMs members perform:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0003	FIXED RESTORATION FABRICATION	21	53	53	58
0004	FIXED RESTORATION SOLDERING	5	13	66	65

The modules listed clearly illustrate the emphasis of this job on fixed restoration duties, with over 60 percent of the personnel's job time contained in these two TMs. The module level data clearly display the narrowly defined scope of this job.

V. AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB (STG44, N=13). This job constitutes 3 percent of the total sample. Incumbents perform an average of 44 tasks, indicating that this job is also somewhat limited in focus. Respondents spend the majority of their duty time fabricating ceramic and metal-ceramic restorations, which includes such tasks as firing porcelains and over-glaze to ceramic restorations, glazing and color correcting ceramic restorations, and oxidizing substructures. In addition to this, incumbents perform tasks such as participating in conferences, assemble tents and don and doff chemical warfare equipment, and perform user maintenance on lab equipment. The following are typical tasks the members of this job perform:

contour fired porcelains
apply and fire over-glaze to ceramic restorations
fire porcelain
apply opaque porcelains
fabricate crowns with porcelain labial margins
surface stain and color correct ceramic restorations
glaze ceramic restorations mechanically
oxidize substructures
apply dentine and enamel porcelains
apply intrinsic stains
etch porcelain laminate veneers
strip porcelain from metal substructures

Respondents in this job average 7 years time in service. Eight hold the 5-skill level, while four hold the 3-skill level, and four are in their first enlistment. One respondent is in paygrade E-6, while the others are in paygrades E-1 to E-5.

Some representative modules include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0006	CERAMIC AND PORCELAIN DUTIES	14	48	48	94
0022	CERAMIC FABRICATION	5	9	57	74
0011	MEDICAL READINESS ACTIVITIES	10	6	63	38
0002	GENERAL LAB MAINTENANCE	5	3	66	31

As can be noted in the table, 57 percent of the members' job time is spent performing tasks within TMs 6 and 22. Supervisors and training personnel should consider the 19 tasks contained in these modules when placing personnel into this job.

VI. REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB (STG17, N=19). This job is performed by 5 percent of the sample who spend 46 percent of their duty time fabricating RPD frameworks, 16 percent performing general lab activities, and 11 percent performing medical readiness activities. Incumbents of this limited job perform an average of 36 tasks. Their responsibilities include working with wrought-wire clasps, investing wax patterns for RPDs, finishing and polishing RPD frameworks, and seating finished RPD frameworks on duplicate master casts. Members with this job are distinguished by the time they spend on the following tasks:

wax and adapt components of RPD framework patterns on refractory casts
blockout and relieve RPD master casts
finish and polish RPD frameworks
seat finished RPD frameworks on duplicate master casts
blockout undercuts on casts
prepare RAPs for RPD frameworks
load or unload patients on patient transportation vehicles
solder wrought-wire clasps to RPD frameworks
bend RPD wrought-wire clasps

Respondents in this job average 7 years time in service. Sixty-three percent hold the 5-skill level, while 26 percent hold the 3-skill level, and 36 percent are in their first enlistment. Fifteen percent are in paygrade E-6, while the rest are in paygrades E-1 to E-5.

Representative modules for the RPD Fabricator job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0031	REMOVABLE PARTIAL DENTURE FABRICATION	13	38	38	62
0002	GENERAL LAB MAINTENANCE	5	6	44	35
0001	DENTAL LAB DOCUMENTATION	7	7	51	29

The specialization in RPD duties becomes apparent when referencing the module table. Members with this job spend half of their time on TMs related to RPD fabrication and related lab duties, and documentation.

VII. SUPPLY JOB (STG47, N=7). This job is performed by 2 percent of the survey sample. Incumbents perform an average of 65 tasks in this somewhat broad job. They report spending 44 percent of their duty time performing supply activities, 11 percent training, and 9 percent of their time on organizing and planning functions. Members in this job are responsible for maintaining supply levels, ordering and issuing supplies, maintaining cost-center management folders, and researching supply catalogs. Typical tasks performed by members with the job include:

maintain supply levels
prepare requests for local purchase items
research supply catalogs
establish supply levels
verify supplies received against invoices
order medical supplies using shopping guides
issue supplies
inventory organizational equipment or supplies
maintain custodian action lists
maintain back-order reports
maintain civilian or federal supply catalogs
order nonmedical supplies
maintain AF medical materiel letter (AFMML) files

Respondents performing this job are the second most experienced group within the study, averaging 9 years time in service. One member holds the 7-skill level, four hold the 5-skill level, and two hold the 3-skill level. Six of the incumbents are distributed equally among the E-4 and E-5 paygrades, while one is in the paygrade E-7.

Representative modules include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0018	SUPPLY ACTIVITIES	13	32	32	98
0020	FINANCIAL DOCUMENTATION	4	7	39	89
0019	FINANCIAL MANAGEMENT	4	7	46	68
0001	DENTAL LAB DOCUMENTATION	7	5	51	37

This table clearly illustrates the emphasis of this job on supply activities, with incumbents spending 32 percent of their total job time in TM 18. The table also emphasizes the other areas where members are spending their duty time, such as financial documentation and management, and dental lab documentation.

VIII. DENTAL LAB NCOIC AND SUPERINTENDENT JOB (STG35, N=21). Incumbents in this job represent 5 percent of the total sample. They spend 66 percent of their job time in supervisory and training functions. Incumbents perform an average of 86 tasks in this broad job. Members are responsible for managing the day-to-day activities of various dental labs. Included in this responsibility are improving work methods or procedures, counseling personnel, conducting performance feedback sessions, evaluating quality control procedures, and writing EPRs. In addition to these managerial duties, incumbents also perform such technical tasks as filing DD forms 2322 (Dental Laboratory Work Authorization), and recording CLV codes on DD Forms 2322. Members with this job are distinguished by the time they spend performing the following tasks:

conduct performance feedback worksheet (PFW) evaluation sessions
interpret policies, directives, or procedures for subordinates
counsel personnel on personal or military-related matters
schedule personnel for leaves, passes, or temporary duty (TDY)
improve work methods or procedures
evaluate quality control procedures
plan or schedule work assignments or priorities
write EPRs

Respondents performing this job are the most experienced group within the study, averaging over 16 years time in service. There were no incumbents in their first enlistment, and the predominate paygrades are E-5 through E-9. Fifty-seven percent of the respondents hold the 7-skill level, while 29 percent hold the 9-/CEM-skill level.

Some representative modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent Sum	Percent Time Spent Cumulative	Avg. Percent Members Perf.
0013	WORKCENTER MANAGEMENT	14	21	21	83
0014	QUALITY ASSURANCE ACTIVITIES	18	17	38	71
0001	DENTAL LAB DOCUMENTATION	7	8	46	70
0015	SUPERVISION DUTIES	7	7	53	62

The Module Table displays the modules one would expect to see from a job of this nature, with the workcenter management module consuming 21 percent of the duty time of the incumbents of this job. In addition, other necessary elements are also displayed, such as the quality assurance, documentation, and supervision modules.

Comparison of Current Group Descriptions to Previous Study

The results of the specialty job analysis were compared to the previous OSR, dated August 1988. Table 6 lists the major jobs identified in the 1994 report and their equivalent jobs from the 1988 OSR. A review of the jobs performed by the current sample indicates that six of the eight 1994 jobs were matched to similar jobs identified in the 1988 report. The two jobs not matched include Fixed Restoration Fabricator job and the Supply job.

The Dental Laboratory career ladder is characterized by a fairly homogeneous job structure. One cluster, the Base Dental Lab cluster, comprises the bulk of the specialty (68 percent). The remainder are distributed across specialized fabrication jobs and supporting supply and management jobs.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may be used to evaluate how well career ladder documents, such as AFMAN 36-2108 Specialty Descriptions and the STS, reflect what career ladder personnel are actually doing in the field.

The distribution of skill-level groups across the career ladder jobs for respondents is displayed in Table 7, while Table 8 offers another perspective by displaying percent time spent on each duty across the skill-level groups.

TABLE 6

SPECIALTY JOB COMPARISONS BETWEEN CURRENT AND 1988 SURVEYS

CURRENT SURVEY	1988 SURVEY
BASE DENTAL LABORATORY CLUSTER - CROWN AND FPD FABRICATORS JOB - DENTURE FABRICATORS JOB	BASE DENTAL LAB AND PROSTHODONTIC SERVICE CENTER PERSONNEL CLUSTER
ORTHODONTIC FABRICATOR JOB	ORTHODONTIC APPLIANCE FABRICATORS IJT
FIXED RESTORATION FABRICATOR JOB	-
CROWN FABRICATOR JOB	AREA DENTAL LAB CROWN AND BRIDGE FABRICATION PERSONNEL CLUSTER
AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB	AREA DENTAL LAB CERAMIC FABRICATOR IJT
REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB	REMOVABLE PARTIAL DENTURE PERSONNEL CLUSTER
SUPPLY JOB	-
DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB	DENTAL LAB NCOIC IJT
-	TECHNICAL SCHOOL INSTRUCTORS IJT

- Indicates no match in report

TABLE 7

DISTRIBUTION OF MEMBERS BY DAFSC ACROSS CAREER LADDER JOBS
(PERCENT)

JOB	4Y131 (N=116)	4Y151 (N=208)	4Y171 (N=68)	4Y191/00 (N=7)
BASE DENTAL LABORATORY CLUSTER	59	75	68	0
ORTHODONTIC FABRICATOR JOB	5	0	0	0
FIXED RESTORATION FABRICATOR JOB	10	6	1	0
CROWN FABRICATOR JOB	7	1	0	0
AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB	3	4	1	0
REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB	4	6	3	0
SUPPLY JOB	2	2	1	0
DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB 0	1	18	86	
NOT GROUPED	10	5	8	14

TABLE 8

TIME SPENT ON DUTIES BY MEMBERS OF DAFSC GROUPS
(RELATIVE PERCENT OF JOB TIME)

	DUTIES	4Y131 (N=116)	4Y151 (N=208)	4Y171 (N=68)
A	ORGANIZING AND PLANNING	1	3	8
B	DIRECTING AND IMPLEMENTING	1	4	10
C	INSPECTING AND EVALUATING	1	4	11
D	TRAINING	2	3	6
E	PERFORMING ADMINISTRATIVE ACTIVITIES	3	5	8
F	PERFORMING SUPPLY ACTIVITIES	2	3	4
G	PERFORMING GENERAL LABORATORY ACTIVITIES	31	22	15
H	FABRICATING DENTURE BASES	11	10	8
I	FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	4	4	2
J	FABRICATING FIXED RESTORATIONS	25	23	15
K	FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	6	10	7
L	FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	2	2	2
M	FABRICATING SPECIAL PURPOSE APPLIANCES	4	3	2
N	PERFORMING MEDICAL READINESS ACTIVITIES	7	4	2

A typical pattern of progression is noted within the Dental Laboratory career ladder, with personnel at the 3-skill level spending most of their time on technical tasks. More relative time is spent on duties involving supervisory, managerial, and administrative tasks (see Table 9, Duties A, B, C, D, and E) as they move upward to the 5- and 7-skill levels.

Skill-Level Descriptions

DAFSC 4Y131: The 116 airmen in the 3-skill level group, representing 29 percent of the survey sample, perform an average of 68 tasks. As shown in Table 7, 59 percent of these airmen are in the Base Dental Lab cluster. They spend approximately 56 percent of their time performing general laboratory activities and fabricating fixed restorations, while 17 percent of their time is spent fabricating denture bases and ceramic or metal-ceramic restorations (see Table 8).

Examples of tasks likely to be performed by 3-skill level personnel include: disinfecting lab equipment, investing and sprueing wax patterns, constructing and seating casts, and articulating using arbitrary mounting techniques. Other examples of common tasks performed by a majority of these airmen are shown in Table 9.

DAFSC 4Y151: The 208 airmen in the 5-skill level group represent 52 percent of the total survey sample and perform an average of 108 tasks. Table 8 shows that 5-skill level personnel spend 45 percent of their relative job time performing duties which involve fabricating fixed restorations and performing general lab activities. The remaining 55 percent is spent on a broad range of technical and managerial tasks, as shown in Table 10.

Although 5-skill level personnel spend almost half of their job time performing technical duties, it is the percent of job time spent on supervisory functions that distinguishes them from 3-skill level specialists. As is shown in Table 11, 5-skill members perform more supervisory tasks such as counseling personnel, establishing performance standards, writing EPRs, and conducting on-the-job training (OJT).

DAFSC 4Y171: Seven-skill level personnel represent 17 percent of the survey sample and perform an average of 136 tasks. Forty-three percent of their relative job time is spent on tasks in supervisory, managerial, training, and administrative duties (more than twice that of 5-skill level personnel). The remaining 57 percent of their time, as can be seen in Table 12, is dedicated to technical tasks such as filing forms, articulating using arbitrary techniques, investing wax patterns, seating and recovering castings, casting conventional gold alloys, and waxing patterns for fixed restorations.

Tasks which best distinguish 7-skill level personnel from their junior counterparts are presented in Table 13. As expected, the key difference is higher percentage of members performing supervisory functions, such as counseling and evaluating personnel, writing recommendations and performance feedback worksheets, and establishing lab standards and procedures.

TABLE 9

REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y131 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=116)
G147	Articulate using arbitrary mounting techniques	83
G173	Disinfect lab equipment or work areas	69
G172	Disinfect appliances	66
G196	Weigh and measure dental laboratory materials	63
J284	Invest wax patterns	62
J290	Sprue wax patterns for fixed restorations	59
N388	Load or unload patients on patient transportation vehicles	59
J293	Wax patterns for fixed restorations	59
G152	Blockout undercuts on casts	59
M347	Fabricate athletic mouthguards	58
G168	Construct working casts with removable dies using Pindex-type systems	57
G151	Bead and box impressions	57
G156	Construct custom impression trays for fixed prosthodontics	56
G159	Construct diagnostic casts, other than orthodontic study casts	55
G181	Perform user maintenance on dental laboratory equipment	53
G184	Prepare slurry water	53
G160	Construct master casts for complete dentures	53
J269	Cutback wax patterns for porcelain or resin-veneer substructures	52
J280	Finish and polish fixed restorations	52
J291	Wax metal-ceramic substructure patterns to full contour prior to cutback	51
G161	Construct master casts for RPDs	51
J274	Fabricate fixed restorations using microscopes	50
J288	Seat castings	50
G191	Soak casts in SDS	50
G158	Construct custom impression trays for removable prosthodontics	50
J263	Burnout wax patterns	49
G178	Mark removable appliances with names and social security numbers	48
G89	Repolish prostheses after clinical adjustments	48
N402	Transport litter patients	47
M361	Fabricate hard nightguards	47

TABLE 10

REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y151 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=208)
G147	Articulate using arbitrary mounting techniques	83
J284	Invest wax patterns	75
J290	Sprue wax patterns for fixed restorations	74
J293	Wax patterns for fixed restorations	73
J280	Finish and polish fixed restorations	73
G181	Perform user maintenance on dental laboratory equipment	72
G172	Disinfect appliances	71
J291	Wax metal-ceramic substructure patterns to full contour prior to cutback	70
J288	Seat castings	69
J269	Cutback wax patterns for porcelain or resin-veneer substructures	68
G173	Disinfect lab equipment or work areas	67
J286	Recover castings	67
G152	Blockout undercuts on casts	66
E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	66
G168	Construct working casts with removable dies using Pindex-type systems	66
J263	Burnout wax patterns	65
J287	Recover precious metal grindings or scraps	65
J281	Finish substructures for porcelain applications	64
J265	Cast conventional gold alloys	64
G196	Weigh and measure dental laboratory materials	64
M347	Fabricate athletic mouthguards	64
J259	Apply die spacers	63
G148	Articulate using facebow transfers	63
J266	Cast metal-ceramic alloys	63
J279	Fabricate surveyed crowns	63
G159	Construct diagnostic casts, other than orthodontic study casts	63
G189	Repolish prostheses after clinical adjustments	61
G176	Fabricate diagnostic wax-ups	61
K316	Fire porcelain	60
N388	Load or unload patients on patient transportation vehicles	60

TABLE 11

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4Y131 AND DAFSC 4Y151 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		4Y131 (N=116)	4Y151 (N=208)	DIFFERENCE
C47	Conduct perform. nce feedback worksheet (PFW) evaluation sessions	5	45	-40
C69	Write EPRs	5	44	-39
C59	Evaluate quality of finished prostheses	6	45	-39
B27	Counsel personnel on personal or military-related matters	5	39	-34
K298	Apply dentine and enamel porcelains	25	58	-33
K318	Glaze porcelain using autogenous method	17	50	-33
K316	Fire porcelain	28	60	-32
K325	Surface stain and color correct ceramic restorations	22	53	-31
D79	Conduct OJT	7	38	-31
K319	Oxidize substructures	24	54	-30
B43	Supervise Dental Laboratory Specialists (AFSC 98250)	3	33	-30
J276	Fabricate post and cores using indirect pattern technique	26	56	-30
J285	Presolder metal-ceramic substructures	15	44	-29
D83	Counsel trainees on training progress	6	34	-28
C46	Analyze workload requirements	6	34	-28
J287	Recover precious metal grindings or scraps	37	64	-27
K324	Strip porcelain from metal substructures	23	50	-27
K297	Apply and fire over-glaze to ceramic restorations	19	46	-27
J275	Fabricate post and cores using direct pattern technique	25	51	-26
K305	Contour fired porcelains	28	54	-26
C58	Evaluate quality control procedures	6	32	-26
A9	Establish laboratory quality fabrication standards	2	28	-26
K303	Apply opaque porcelains	27	52	-25

TABLE 12

REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y171 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=68)
C59	Evaluate quality of finished prostheses	81
B27	Counsel personnel on personal or military-related matters	81
C47	Conduct performance feedback worksheet (PFW) evaluation sessions	78
C69	Write EPRs	76
E104	File or review DD Forms 2322 (Dental Laboratory Work Authorization)	76
E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	76
C56	Evaluate personnel for compliance with performance standards	75
A13	Participate in conferences, or workshops	75
G147	Articulate using arbitrary mounting techniques	75
A9	Establish laboratory quality fabrication standards	74
B38	Improve work methods or procedures	72
B43	Supervise Dental Laboratory Specialists (AFSC 98250)	72
J284	Invest wax patterns	72
J288	Seat castings	72
G181	Perform user maintenance on dental laboratory equipment	72
G172	Disinfect appliances	71
J290	Sprue wax patterns for fixed restorations	71
C58	Evaluate quality control procedures	69
A16	Plan or schedule work assignments or priorities	69
J291	Wax metal-ceramic substructure patterns to full contour prior to cutback	69
J269	Cutback wax patterns for porcelain or resin-veneer substructures	69
J286	Recover castings	69
J293	Wax patterns for fixed restorations	68
A22	Schedule personnel for leaves, passes, or temporary duty (TDY)	68
B26	Conduct supervisory orientations of newly assigned personnel	68
J280	Finish and polish fixed restorations	68
D75	Attend continuing education sessions or courses	68
J265	Cast conventional gold alloys	68
C46	Analyze workload requirements	66
B39	Interpret policies, directives, or procedures for subordinates	68

TABLE 13

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4Y151 AND DAFSC 4Y171 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		4Y151 (N=208)	4Y171 (N=68)	DIFFERENCE
A22	Schedule personnel for leaves, passes, or temporary duty (TDY)	16	67	-51
C56	Evaluate personnel for compliance with performance standards	28	75	-47
B26	Conduct supervisory orientations of newly assigned personnel	21	67	-46
A9	Establish laboratory quality fabrication standards	28	73	-45
B44	Supervise Dental Laboratory Technicians (AFSC 98270)	6	50	-44
A1	Assign personnel to duty positions	18	60	-42
B27	Counsel personnel on personal or military-related matters	39	80	-41
B39	Interpret policies, directives, or procedures for subordinates	26	66	-40
C71	Write recommendations for awards or decorations	21	60	-39
B32	Implement continuing education programs or procedures	23	61	-38
B37	Implement self-inspection programs or procedures	18	56	-38
A6	Develop management objectives	14	52	-38
F122	Assign personnel to receive supplies or precious metals	14	52	-38
B43	Supervise Dental Laboratory Specialists (AFSC 98250)	33	71	-38
A2	Assign sponsors for newly assigned personnel	9	47	-38
A16	Plan or schedule work assignments or priorities	31	69	-38
A12	Establish work methods, production controls, or inspection procedures	25	63	-38
B34	Implement hazardous chemicals programs or procedures	11	48	-37
C63	Evaluate work schedules	19	56	-37
C58	Evaluate quality control procedures	33	70	-37

Summary

A typical career ladder progression within the AFSC 4Y1X1 career ladder is evident, with personnel at the 3-skill level spending the vast majority of their job time performing technical tasks. A moderate shift towards supervisory functions occurs at the 5-skill level, with members still spending more than 60 percent of their duty time performing technical functions. Personnel at the 7-skill level perform both technical and supervisory functions, with a relatively higher percentage of their time spent on supervisory duties, as compared to the more junior personnel.

ANALYSIS OF AFMAN 36-2108 SPECIALTY DESCRIPTIONS

Survey data were compared to the AFMAN 36-2108 Specialty Descriptions for Dental Laboratory Apprentices and Journeymen, dated 15 Mar 1991, effective 30 April 1991. The descriptions for the 3-, 5-, and 7-skill levels were generally accurate, depicting the highly technical aspects of the job, as well as the increase in supervisory responsibilities previously described in the DAFSC analysis. The descriptions also capture the primary responsibilities of members identified by the job structure analysis process.

TRAINING ANALYSIS

Occupational survey data are sources of information which can be used to assist in the development of relevant training programs for entry-level personnel. Factors used to evaluate entry-level Dental Laboratory training include jobs being performed by first-enlistment personnel, overall distribution of first-enlistment personnel across career ladder jobs, percent first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) members performing specific tasks, ratings of how much emphasis tasks should receive in formal training, and ratings of relative TD.

First-Enlistment Personnel

In this study, there are 108 AFSC 4Y1X1 personnel in their first enlistment (1-48 months TAFMS), representing 27 percent of the survey sample. As displayed in Table 14, approximately 95 percent of their duty time is devoted to performing technical tasks. First-enlistment personnel spend the majority of their job time in three areas: Performing general laboratory activities (32 percent), Fabricating fixed restorations (25 percent), and Fabricating denture bases (12 percent). The vast majority of first-enlistment personnel are involved in day-to-day Dental Laboratory activities. Table 15 shows typical tasks performed by first-enlistment personnel, most of which

TABLE 14

RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY FIRST-ENLISTMENT AFSC 4Y1X1 PERSONNEL

	TASKS	PERCENT TIME SPENT
A	ORGANIZING AND PLANNING	1
B	DIRECTING AND IMPLEMENTING	1
C	INSPECTING AND EVALUATING	*
D	TRAINING	1
E	PERFORMING ADMINISTRATIVE ACTIVITIES	2
F	PERFORMING SUPPLY ACTIVITIES	1
G	PERFORMING GENERAL LABORATORY ACTIVITIES	32
H	FABRICATING DENTURE BASES	12
I	FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	5
J	FABRICATING FIXED RESTORATIONS	25
K	FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	5
L	FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	3
M	FABRICATING SPECIAL PURPOSE APPLIANCES	5
N	PERFORMING MEDICAL READINESS ACTIVITIES	7

* Denotes less than 1 percent

TABLE 15

REPRESENTATIVE TASKS PERFORMED BY
FIRST-ENLISTMENT PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=108)
	Articulate using arbitrary mounting techniques	81
[illegible]73	Disinfect lab equipment or work areas	66
G172	Disinfect appliances	63
G152	Blockout undercuts on casts	63
J284	Invest wax patterns	61
G196	Weigh and measure dental laboratory materials	60
J290	Sprue wax patterns for fixed restorations	58
N388	Load or unload patients on patient transportation vehicles	57
M347	Fabricate athletic mouthguards	57
G151	Bead and box impressions	57
G159	Construct diagnostic casts, other than orthodontic study casts	56
J293	Wax patterns for fixed restorations	55
G156	Construct custom impression trays for fixed prosthodontics	55
G181	Perform user maintenance on dental laboratory equipment	54
G184	Prepare slurry water	54
G158	Construct custom impression trays for removable prosthodontics	53
G160	Construct master casts for complete dentures	53
G168	Construct working casts with removable dies using Pindex-type systems	52
G161	Construct master casts for RPDs	51
M361	Fabricate hard nightguards	50
J291	Wax metal-ceramic substructure patterns to full contour prior to cutback	50
J269	Cutback wax patterns for porcelain or resin-veneer substructures	50
J280	Finish and polish fixed restorations	50
J288	Seat castings	50
H204	Boil out wax from molds	50
G178	Mark removable appliances with names and social security numbers	49
N402	Transport litter patients	48
J263	Burnout wax patterns	48
G166	Construct stone matrices for denture repairs	48
J274	Fabricate fixed restorations using microscopes	47

deal with technical tasks such as disinfecting lab equipment, work areas, and appliances, investing and sprueing wax patterns, articulating using arbitrary mounting techniques, and fabricating mouthguards. Table 16 shows the equipment items utilized by 40 percent or more of the first-job and first-enlistment AFSC 4Y1X1 personnel.

Within the groups identified in the **SPECIALTY JOBS** section of this report, first-enlistment personnel were present in six of the eight jobs. As shown in Figure 3, 60 percent of first-enlistment personnel surveyed are grouped in the BDL cluster.

TE and TD Data

TE and TD data are secondary task factors that can help training development personnel decide which tasks to emphasize for entry-level training. These ratings, based on the judgments of senior career ladder NCOs at operational units, provide a rank-ordering of those tasks considered important for first-enlistment airman training (TE) and a measure of the relative difficulty of those tasks (TD). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors (TE and TD), accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-enlistment personnel. These decisions must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks.

To assist training development personnel, AFOMS developed a computer program that uses these task factors and the percentage of first-enlistment personnel performing tasks to produce Automated Training Indicators (ATI). ATIs correspond to training decisions listed and are defined in the Training Decision Logic Table found in Attachment 1, ATCR 52-22. ATI allows training developers to quickly focus attention on those tasks which are most likely to qualify for ABR course consideration

Tasks having the highest TE ratings are listed in Table 17. Included for each task are the percentage of first-job and first-enlistment personnel performing and the TD rating. As illustrated in Table 17, tasks with the highest TE ratings deal with constructing various casts, waxing and sprueing patterns for fixed restorations, fabricating and flasking RPDs, and fabricating interim RPDs. These tasks are performed by high percentages of first-job, first-enlistment personnel.

Table 18 lists the tasks having the highest TD ratings. The percentage of first-enlistment, first-job, 5- and 7-skill level personnel performing, and TE ratings is also included for each task. Most tasks with high TD ratings are technical and supervisory functions, are performed by quite low percentages of first-job, first-enlistment, 5- and 7-skill level members, and have low TE ratings. The few technical tasks with high TD ratings also have high TE ratings and are performed by high percentages of survey respondents.

TABLE 16

EQUIPMENT ITEMS USED BY MORE THAN 40 PERCENT OF FIRST-JOB OR FIRST-ENLISTMENT PERSONNEL

EQUIPMENT	4Y1X1 1ST JOB (N=39)	4Y1X1 1ST ENL (N=108)
SEMIADJUSTABLE ARTICULATORS	92	92
DENTAL VIBRATORS	90	89
ELECTRIC HANDPIECES	82	87
GENERAL PURPOSE CAST TRIMMERS	82	85
NONADJUSTABLE ARTICULATORS	69	72
VACUUM INVESTORS	69	69
BENCH-MOUNTED DENTAL LATHES	64	72
STEAM CLEANERS	64	72
SUCTION UNITS	62	71
PNEUMATIC CHISELS	62	65
MICROSCOPES	59	70
ULTRASONIC CLEANERS	59	74
MICROBLASTER MACHINES	54	69
PRESSURE POTS	54	60
DENTURE FLASKS	54	56
DENTAL SURVEYORS	51	59
BROKEN ARM TYPE CASTING MACHINES	49	56
ELECTRONIC SCALES	46	57
WATERBATHS	46	56
DOWEL PIN DRILLING MACHINES	46	53
CROWN AND FIXED PARTIAL DENTURE BURNOUT OVENS	44	56
SHELLBLAST MACHINES	44	55
SANDBLAST MACHINES	44	50
GAS BOILOUT TANKS	44	49
HIGH-SPEED DENTAL LATHES	44	49
CASTING TORCHES	41	52
RELINE JIGS	41	49

JOBS PERFORMED BY FIRST-ENLISTMENT AFSC 4Y1X1 PERSONNEL

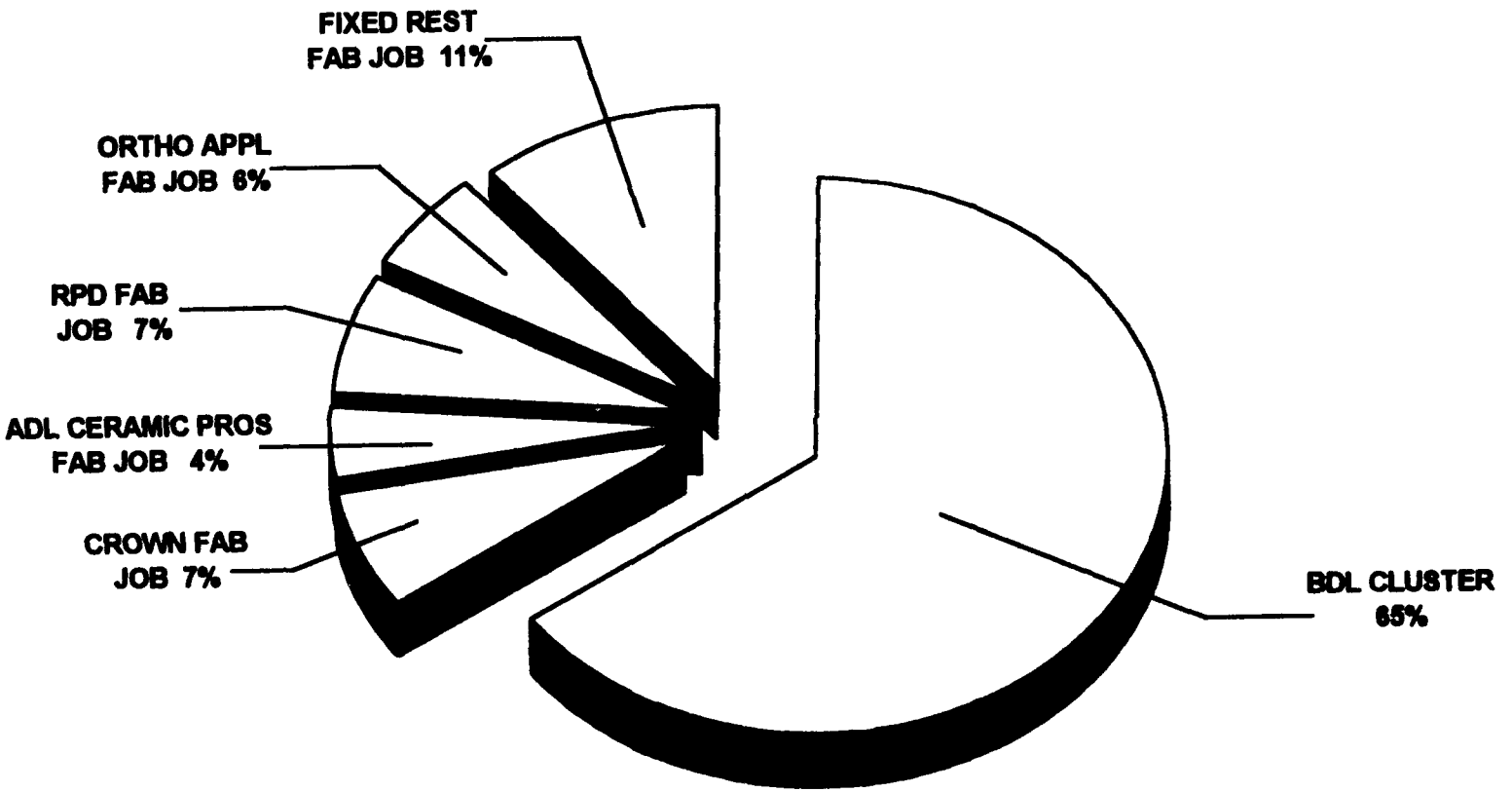

FIGURE 3

TABLE 17

SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS RATINGS

TASKS		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL	TSK DIFF
G168	Construct working casts with removable dies using Pindex-type systems	7.68	46	53	4.90
G160	Construct master casts for complete dentures	7.63	44	54	4.44
G161	Construct master casts for RPDs	7.55	41	52	4.53
G159	Construct diagnostic casts, other than orthodontic study casts	7.54	49	56	3.49
J293	Wax patterns for fixed restorations	7.46	51	56	5.66
J290	Sprue wax patterns for fixed restorations	7.42	56	58	4.76
J288	Seat castings	7.38	33	50	4.84
J284	Invest wax patterns	7.37	56	61	4.42
J280	Finish and polish fixed restorations	7.35	31	50	4.83
J291	Wax metal-ceramic substructure patterns to full contour prior to cutback	7.28	51	50	5.61
J265	Cast conventional gold alloys	7.28	31	45	4.21
H223	Finish and polish denture bases	7.26	36	43	4.41
H226	Flask RPDs	7.23	33	42	5.66
H216	Fabricate interim RPDs	7.23	38	41	5.08
H225	Flask complete dentures	7.22	23	41	4.53
H220	Fabricate record bases and occlusion rims	7.18	33	41	4.07
H203	Arrange artificial teeth opposing natural dentitions	7.14	33	44	5.12
H227	Pack and cure complete denture molds	7.08	28	44	4.64
H231	Reline complete dentures or RPDs	7.06	23	37	5.05
H202	Arrange artificial teeth for RPDs	7.06	36	46	5.10
G151	Bead and box impressions	7.06	46	57	3.87
H235	Wax-up denture bases for processing	6.98	31	42	4.98
J266	Cast metal-ceramic alloys	6.95	31	37	4.38
G172	Disinfect appliances	6.89	56	63	2.92
G147	Articulate using arbitrary mounting techniques	6.89	87	81	3.55
J286	Recover castings	6.82	38	45	3.30
G188	Replace broken or missing artificial teeth on complete or partial denture bases	6.72	36	46	4.72
G156	Construct custom impression trays for fixed prosthodontics	6.72	51	56	3.68
G173	Disinfect lab equipment or work areas	6.69	59	66	2.96
G166	Construct stone matrices for denture repairs	6.69	41	48	3.49

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)
TD MEAN = 5.00; S.D. = 1.00

TABLE 18

SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY RATINGS

TASKS		TSK DIFF	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL	4Y151	4Y171	TNG EMP
L330	Fabricate Frankel appliances	7.69	0	2	2	3	1.12
I244	Fabricate swing-lock RPD frameworks	7.30	0	2	5	4	.88
M352	Fabricate cranial implants	7.17	0	0	0	0	.40
M357	Fabricate ear, nose, or extremity prostheses	7.13	0	2	1	1	.57
D85	Develop career development course (CDC) materials	7.13	0	0	0	3	.18
M366	Fabricate obstetrics/gynecology (OB/GYN) stents	7.10	0	0	0	0	.38
K314	Fabricate porcelain jacket crowns	6.99	3	3	2	4	1.71
K315	Fabricate porcelain laminate veneers	6.84	3	6	14	21	2.80
D87	Develop resident course curriculum materials	6.83	0	0	3	6	.14
M367	Fabricate occular prostheses	6.80	0	2	1	1	.48
K309	Fabricate Dicor restorations	6.79	0	2	3	0	1.22
L326	Fabricate bionators	6.75	0	3	4	1	.92
I243	Fabricate RPD frameworks using precision attachments	6.74	3	2	2	3	.92
K310	Fabricate Dicor substructures	6.73	0	2	3	0	1.17
G177	Fabricate titanium castings	6.73	5	5	3	3	1.06
M372	Fabricate plastic surgery silicone implants	6.71	0	0	0	0	.31
A14	Plan layouts of facilities	6.62	0	1	9	18	.29
M360	Fabricate glossectomy appliances	6.59	0	2	2	0	.48
M368	Fabricate palatal lifts	6.57	0	1	1	0	.51
A10	Establish organizational policies, operating instructions (OIs), or standing operating procedures (SOPs)	6.52	3	2	15	50	.89
K305	Contour fired porcelains	6.51	8	24	55	59	5.75
M365	Fabricate nasal stents	6.51	0	0	0	0	.46
K301	Apply intrinsic stains	6.51	0	12	38	37	4.31
C71	Write recommendations for awards or decorations	6.51	0	1	21	60	.57
J272	Fabricate fixed partial dentures for use with dental implants	6.51	0	6	7	9	1.86
K311	Fabricate In-Ceram restorations	6.51	3	4	4	1	1.38
K308	Fabricate crowns with porcelain labial margins	6.50	5	22	52	54	5.12
M369	Fabricate pectus-excavatum implants	6.47	0	0	0	0	.26
C69	Write EPRs	6.45	0	2	45	76	1.05
J273	Fabricate fixed restorations using attachments	6.45	5	10	33	26	2.54
M351	Fabricate cleft palate obturators	6.43	0	3	3	6	1.32

TD MEAN = 5.00; S.D. = 1.00
TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

Various lists of tasks, accompanied by TE and TD ratings, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the **SURVEY METHODOLOGY** section of this report.

Specialty Training Standard (STS)

Technical school personnel from the Sheppard Training Center matched JI tasks to sections and subsections of the Dental Laboratory Specialty STS and to the ABR4Y131 Plan of Instruction (POI). Listings of the STS and POI were then produced, showing tasks matched, percent members performing the tasks, and TE and TD ratings for each matched task. These listings are included in the Training Extract sent to the school for review. Criteria set forth in AFR 8-13 (dated 1 August 1986), and AETCR 52-22 paragraph 3b(2), were used to review the relevance of each STS element that had inventory tasks matched to it. Any element with matched tasks performed by 20 percent or more first-job, first-enlistment, 5-, or 7-skill level 4Y1X1 members is considered to be supported and should be part of the STS.

AFSC 4Y1X1 STS

Paragraphs 1 through 5 deal with general topics of security, supervision, training, technical publications, and management. Because paragraphs 1 through 5 deal with general topics, they were not reviewed. Paragraphs 6 through 19 cover the common aspects of the career ladder.

Using standard AETC criteria and percentages of first-job, first enlistment, 5-, and 7-skill level members performing matched tasks, all but 12 entries are supported by survey data. Ten of the twelve unsupported entries were in paragraph 15 - Removable Partial Dentures, and included survey and design diagnostic cast (entry 15a), transfer design to master cast (entry 15b), block out and ledge master casts (entry 15d), relieve master casts (entry 15e), duplicate master casts (entry 15f), wax frameworks (entry 15h), sprue and invest wax-ups (entry 15i), and prepare tube teeth (entry 15p). Another unsupported entry was found in paragraph 6 (entry 6c(3)) and concerns issuing supplies. The final unsupported entry was found in paragraph 17 (entry 17b(1)) and deals with fabricating porcelain jacket crowns. Examples of the unsupported entries, with accompanying survey data, are listed in Table 19.

One STS entry, paragraph 13e, deals with performing altered cast techniques for removable partial dentures. This entry is matched to tasks performed by very high percentages of criterion group members and has high TE and TD ratings, but has a dash (-) training code, meaning students in the entry-level course are not taught how to perform this task. Because these functions are not taught in the entry-level course, but are performed by high percentages of personnel, training personnel need to ensure they are adequately covered by the OJT curriculum and may consider adding these tasks into the entry-level course.

TABLE 19

EXAMPLES OF STS ITEMS NOT SUPPORTED BY OSR DATA

STS REFERENCE/TASKS		3-LVL COURSE PROF CODE	TNG EMP	PERCENT MEMBERS PERFORMING			TSK DIFF
				1ST ENL (N=108)	5-SKILL LEVEL (N=208)	7-SKILL LEVEL (N=68)	
0133	15a. Survey and design diagnostic cast	a					
I255	Survey and design casts for RPD frameworks		1.35	4	6	4	6.28
0134	15b. Transfer design to master casts	1a					
I256	Transfer design from RPD diagnostic to master casts		1.91	6	5	6	5.08
0137	15e. Relieve master casts	1a					
I237	Blockout and relieve RPD master casts		3.48	17	13	12	4.74
0138	15f. Duplicate master casts	1a					
I239	Duplicate RPD master casts to produce refractory or duplicate master casts		2.74	8	6	9	4.70
0140	15h. Wax frameworks	1a					
I257	Wax and adapt components of RPD framework patterns on refractory casts		2.35	7	8	9	5.29
0189	17b(1). Porcelain jacket crowns	-					
K314	Fabricate porcelain jacket crowns		1.71	3	2	4	6.99

TD MEAN = 5.00; S.D. = 1.00
TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

There are a few technical tasks performed by more than 20 percent of all respondents that are not matched to STS elements (see Table 20). These tasks deal with waxing patterns for fixed restorations; disinfecting appliances, work areas and lab materials; attaching wrought-wire clasps to RPDs with acrylic; and replacing artificial teeth on denture bases. Training personnel and SMEs should consider these and other unreferenced tasks to assure proper training is available.

Plan of Instruction (POI)

JI tasks were matched to related learning objectives in POI J3ABR4Y131-004, dated 21 June 1993, with assistance from technical school SMEs. The method employed was similar to that of the STS analysis. The data examined included percent members performing data for first-enlistment (1-48 months TAFMS) personnel, and TE and TD ratings. ATIs for each task were also used.

POI blocks, units of instruction, and learning objectives were compared to the standards set forth in Attachment 1, ATCR 52-22, dated 17 February 1989 (30 percent or more of the criterion first-job or first-enlistment group members performing tasks, along with sufficiently high TE and TD ratings on those tasks). By this guidance, learning objectives in the course, which do not meet these criteria, should be considered for elimination from the formal course, if not justified on some other acceptable basis.

Review of the tasks matched to the POI reveals that of the 55 matched learning objectives, 7 were not supported by OSR data. Two of the seven unsupported learning objectives are contained in block 3 - Removable Partial Denture Prosthodontics, and are focused on transferring RPD designs from diagnostic casts to master casts, and waxing-up RPD frameworks. These were also unsupported STS entries. Four other unsupported learning objectives were found in block 4 - Dental Metals and Alloys. The first two were focused on recording expenditures of precious metals and alloys, and dental laboratory supply. The last two unsupported learning objectives in block 4 concerned performing basic cardiac life support. These objectives, while not performed on a regular basis, are considered critical for students who will work in a medical environment. The last unsupported learning objective was found in block 5 - Dental Porcelains. A sample of these objectives is in Table 21, along with the accompanying JI task and survey data.

Many technical tasks performed by over 30 percent of first-enlistment personnel were not matched to the POI. These tasks included surveying casts for undercuts, fabricating fixed restorations using microscopes, mixing disinfectant solutions, and fabricating bleaching stents and fluoride carriers. A more complete list of these tasks, with survey data, is listed in Table 22. In addition to many members performing these functions, several of these tasks are rated high in TE and TD. Training personnel and SMEs should review these and other unreferenced tasks to determine if training should be provided in the formal course.

TABLE 20

EXAMPLES OF TECHNICAL TASKS WITH HIGH TE PERFORMED BY 20 PERCENT OR MORE AFSC 4Y1X1 GROUP MEMBERS AND NOT REFERENCED TO THE STS

TASKS		PERCENT MEMBERS PERFORMING 1ST JOB (N=39)	1ST ENL (N=108)	DAFSC 4Y151 (N=208)	DAFSC 4Y171 (N=68)	TNG EMP	TASK DIFF
J293	Wax patterns for fixed restorations	51	56	73	68	7.46	5.66
G159	Construct diagnostic casts, other than orthodontic study casts	49	56	63	51	7.54	3.49
G172	Disinfect appliances	56	63	71	71	6.89	2.92
G173	Disinfect lab equipment or work areas	59	66	67	63	6.69	2.96
G196	Weigh and measure dental laboratory materials	54	60	64	59	5.86	2.63
G143	Adapt artificial teeth to casts and construct indeces for reinforced acrylic pontics (RAPs)	26	35	49	53	6.03	4.83
G150	Attach wrought-wire clasps to RPDs with acrylic	23	34	41	47	5.60	4.93
G186	Repair complete or partial denture bases, except replacing broken or missing teeth	33	45	50	54	6.66	4.52
G188	Replace broken or missing artificial teeth on complete or partial denture bases	36	46	55	56	6.72	4.72

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)
TD MEAN = 5.00; S.D. = 1.00

TABLE 21

EXAMPLES OF POI OBJECTIVES NOT SUPPORTED BY OSR DATA

POI OBJECTIVES/TASKS			TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB (N=39)	PERCENT MEMBERS PERFORMING 1ST ENL (N=108)	ATI	TSK DIFF
0067	III 3a.	Given RPD case #6, and required equipment and materials, transfer the RPD designs from diagnostic casts to the master casts IAW Progress Checklist J3ABR98230 004-03-03a. Meas: PC/W					
I256	Transfer design from RPD diagnostic to master casts		1.91	0	6	2	5.08
0074	III 6a.	With the refractory casts, and required equipment and materials, wax-up RPD frameworks IAW Progress Checklist J3ABR98230 004-03-06a. Meas: PC/W					
I257	Wax and adapt components of RPD framework patterns on refractory casts		2.35	5	7	2	5.29
0076	III 7a.	With required equipment and materials, sprue, invest, burnout, and cast the frameworks IAW Progress Checklist J3ABR98230 004-03-07a. Meas: PC/W					
I238	Burnout and cast RPD investment molds		2.42	3	8	2	4.46
I246	Invest wax patterns for RPDs		2.48	3	6	2	4.86
0078	III 8a.	With required equipment and materials, recover, finish, and polish the frameworks IAW Progress Checklist J3ABR98230 004-03-08a. Meas: PC/W					
I245	Finish and polish RPD frameworks		3.66	5	11	7	5.41
I251	Seat finished RPD frameworks on duplicate master casts		2.86	5	8	2	5.38
0093	IV 4b.	Given SW J3ABR98230 004-04-04b, Dental Metals and Alloys, record your expenditures of precious metals and alloys with 70% accuracy. Meas: PC/W					
E104	File or review DD Forms 2322 (Dental Laboratory Work Authorization)		3.60	8	18	7	4.20
E110	Maintain dental registers of precious metals and alloys		4.66	5	14	7	4.81
E105	Lock up precious metals and alloys		4.48	10	19	3	3.15

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)
TD MEAN = 5.00; S.D. = 1.00

TABLE 22

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 30 PERCENT OR MORE
AFSC 4Y1X1 GROUP MEMBERS AND NOT REFERENCED TO THE POI

TASKS		TNG EMP	1ST JOB (N=39)	1ST ENL (N=108)	TSK ATI	DIFF
G161	Construct master casts for RPDs	7.55	41	52	18	4.53
N388	Load or unload patients on patient transportation vehicles	4.22	38	57	17	4.18
D75	Attend continuing education sessions or courses	3.37	46	40	15	4.39
G165	Construct orthodontic study casts	4.83	33	39	15	5.19
G193	Survey casts for undercuts	4.80	33	43	15	4.81
M378	Fabricate surgical stents	4.45	38	37	15	4.13
G144	Add artificial teeth to existing removable partial dentures (RPDs) bases	6.38	36	44	12	4.85
G188	Replace broken or missing artificial teeth on complete or partial denture bases	6.72	36	46	12	4.72
J274	Fabricate fixed restorations using microscopes straight-pin techniques	5.77	46	47	12	5.14
G166	Construct stone matrices for denture repairs	6.69	41	48	10	3.49
G167	Construct working casts for orthodontic appliances	6.20	41	46	10	3.79
J287	Recover precious metal grindings or scraps	5.66	31	38	10	2.81
G184	Prepare slurry water	5.09	36	55	8	2.30
G162	Construct matrices made of impression materials, such as Reprosil or Express, for denture repairs	5.08	33	40	5	3.85
G179	Mix disinfectant solutions	5.14	38	43	5	2.78
G183	Prepare saturated calcium sulphate dihydrate solutions (SDSs)	4.66	44	40	5	2.37
G190	Repour final impressions for duplicate working casts	5.03	31	38	5	3.41
G195	Unpack cases received from other bases	3.92	33	38	5	2.14
M348	Fabricate bleaching stents	4.42	36	36	5	3.10
M359	Fabricate fluoride carriers	4.06	33	32	5	3.58
N402	Transport litter patients	3.82	31	48	5	3.97

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)
TD MEAN = 5.00; S.D. = 1.00

JOB SATISFACTION ANALYSIS

An examination of job satisfaction indicators can give managers a better understanding of factors that may affect the job performance of career ladder airmen. Therefore, the survey booklet included questions about job interest, perceived utilization of talents and training, sense of accomplishment from work, and reenlistment intentions. The responses of the current survey sample were then analyzed by making several comparisons: (1) among TAFMS groups of the AFSC 4Y1X1 career ladder and a comparative sample of personnel from other recently surveyed Medical career fields, (2) between current and previous survey TAFMS groups, and (3) across the cluster and jobs identified in the **SPECIALTY JOBS** section of this report.

Table 23 compares first-enlistment (1-48 months TAFMS), second-enlistment (49-96 months TAFMS), and career (97+ months TAFMS) group data to corresponding enlistment groups from other Medical AFSCs surveyed during the previous calendar year. These data give a relative measure of how the job satisfaction of AFSC 4Y1X1 personnel compares with similar Air Force specialties. Dental Laboratory personnel reported generally higher job satisfaction than members of the comparative sample. However, the career group rated their reenlistment intention lower than that of the comparative sample career group. Overall, satisfaction for all three TAFMS groups is relatively high. The percentages of positive responses in these comparisons reflect a career ladder where personnel appear to be quite satisfied with their jobs.

An indication of changes in job satisfaction perceptions within the career ladder is provided in Table 24, which presents TAFMS group data for 1994 survey respondents and data from respondents to the last OSR of the career ladder in 1988 (AFSC 982X0). Generally, perceptions of job satisfaction have remained constant for all TAFMS groups when compared to the AFSC 982X0 sample. Second-enlistment personnel increase in perceived use of training and talents, while career group personnel show an increase for plans of retirement. Overall, job satisfaction has remained stable within the career ladder.

Table 25 presents job satisfaction data for incumbents with the major jobs identified in the career ladder structure for AFSC 4Y1X1. An examination of these data may reveal indications of concern to functional managers. Job satisfaction indicators for the specialty job groups suggest that members of the Orthopedic Appliance Fabricator job, ADL Ceramic Prostheses Fabricator job, and the BDL cluster are most satisfied. Members expressing the least amount of satisfaction were found in the Supply job, RPD Fabricator job, and the Crown Fabricator job. These three groups constitute less than 10 percent of the total survey sample, and personnel performing the Supply job are essentially working out of the specialty. Job satisfaction indicators suggest that there are no major problems with the satisfaction of this career field.

TABLE 23

COMPARISON OF JOB SATISFACTION INDICATORS FOR TAFMS GROUPS IN CURRENT SURVEY TO A COMPARATIVE SAMPLE (PERCENT MEMBERS RESPONDING)

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	4Y1X1 (N=108)	COMP SAMPLE (N=341)	4Y1X1 (N=97)	COMP SAMPLE (N=231)	4Y1X1 (N=194)	COMP SAMPLE (N=387)
EXPRESSED JOB INTEREST						
INTERESTING	81	79	86	81	88	82
SO-SO	10	12	8	14	7	11
DULL	9	9	6	5	5	7
PERCEIVED USE OF TALENTS						
FAIRLY WELL TO PERFECT	92	83	93	83	93	86
NONE TO VERY LITTLE	8	17	7	17	7	14
PERCEIVED USE OF TRAINING						
FAIRLY WELL TO PERFECT	94	89	95	90	95	89
NONE TO VERY LITTLE	6	11	5	10	5	11
SENSE OF ACCOMPLISHMENT FROM JOB						
SATISFIED	84	72	88	72	84	73
NEUTRAL	10	9	1	12	6	9
DISSATISFIED	6	19	11	16	10	18
REENLISTMENT INTENTIONS						
YES OR PROBABLY YES	67	53	68	67	72	78
NO OR PROBABLY NO	33	47	32	32	12	8
WILL RETIRE	0	0	0	1	16	14

Comparative data are from AFSCs 4J0X2 (Physical Therapy) and 4P0X1 (Pharmacy) surveyed in 1993

TABLE 24

COMPARISON OF JOB SATISFACTION INDICATORS FOR
TAFMS GROUPS IN CURRENT SURVEY TO PREVIOUS SURVEY
(PERCENT MEMBERS RESPONDING)

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	1994 (N=108)	1988 (N=225)	1994 (N=97)	1988 (N=107)	1994 (N=194)	1988 (N=137)
EXPRESSED JOB INTEREST						
INTERESTING	81	84	86	85	88	89
SO-SO	10	10	8	5	7	10
DULL	9	6	6	10	5	1
PERCEIVED USE OF TALENTS						
FAIRLY WELL TO PERFECT	92	90	93	88	93	89
NONE TO VERY LITTLE	8	10	7	12	7	11
PERCEIVED USE OF TRAINING						
FAIRLY WELL TO PERFECT	94	94	95	90	95	88
NONE TO VERY LITTLE	6	6	5	10	5	12
SENSE OF ACCOMPLISHMENT FROM JOB						
SATISFIED	84	87	88	80	84	79
NEUTRAL	10	10	1	10	6	12
DISSATISFIED	6	3	11	10	10	9
REENLISTMENT INTENTIONS						
YES OR PROBABLY YES	67	68	68	79	72	77
NO OR PROBABLY NO	33	30	32	11	12	15
WILL RETIRE	0	2	0	10	16	8

TABLE 25

JOB SATISFACTION INDICATORS FOR JOBS
(PERCENT MEMBERS RESPONDING)

	BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
EXPRESSED JOB INTEREST				
INTERESTING	90	100	80	84
SO-SO	5	0	12	18
DULL	5	0	8	18
PERCEIVED USE OF TALENTS				
FAIRLY WELL TO PERFECT	95	100	84	91
NONE TO VERY LITTLE	5	0	16	9
PERCEIVED USE OF TRAINING				
FAIRLY WELL TO PERFECT	97	100	96	91
NONE TO VERY LITTLE	3	0	4	9
SENSE OF ACCOMPLISHMENT FROM JOB				
SATISFIED	91	86	72	73
NEUTRAL	4	14	16	9
DISSATISFIED	5	0	12	18
REENLISTMENT INTENTIONS				
YES OR PROBABLY YES	72	71	64	73
NO OR PROBABLY NO	20	29	36	27
WILL RETIRE	8	0	0	0

TABLE 25 (CONTINUED)

JOB SATISFACTION INDICATORS FOR JOBS
(PERCENT MEMBERS RESPONDING)

	ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)	RPD FABRICATOR JOB (STG17)	SUPPLY JOB (STG47)	DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)
EXPRESSED JOB INTEREST				
INTERESTING	92	74	71	76
SO-SO	8	10	14	19
DULL	0	16	15	5
PERCEIVED USE OF TALENTS				
FAIRLY WELL TO PERFECT	100	84	86	95
NONE TO VERY LITTLE	0	16	14	5
PERCEIVED USE OF TRAINING				
FAIRLY WELL TO PERFECT	100	89	71	95
NONE TO VERY LITTLE	0	11	29	5
SENSE OF ACCOMPLISHMENT FROM JOB				
SATISFIED	85	74	57	76
NEUTRAL	8	16	14	5
DISSATISFIED	7	10	29	19
REENLISTMENT INTENTIONS:				
YES OR PROBABLY YES	77	68	43	57
NO OR PROBABLY NO	23	26	43	19
WILL RETIRE	0	6	14	24

IMPLICATIONS

As explained in the **INTRODUCTION**, this survey was conducted primarily to provide training personnel with current information on the Dental Laboratory career ladder for use in reviewing current training programs and training documents. The data compiled from this survey support the current structure of the AFSC 4Y1X1 career ladder. The present classification structure, as described by the AFMAN 36-2108 Specialty Descriptions, accurately portrays the jobs in this study.

Analysis of career ladder documents indicates both the STS and POI contain a few unsupported line items and learning objectives. A few of the unsupported areas in both documents are directly related (CRPD frameworks) and should be reviewed to determine if their inclusion in future revisions of these documents is warranted.

No serious job satisfaction problems appear to exist within this specialty. Overall, job satisfaction responses were almost all higher than those of a comparative sample of similar Air Force personnel surveyed in 1992.

APPENDIX A

REPRESENTATIVE TASKS PERFORMED BY MEMBERS OF CAREER LADDER JOBS

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE A1

BASE DENTAL LAB CLUSTER
(STG26)

TASKS		PERCENT PERFORMING
G147	Articulate using arbitrary mounting techniques	95
G172	Disinfect appliances	90
M347	Fabricate athletic mouthguards	84
J284	Invest wax patterns	84
G168	Construct working casts with removable dies using Pindex-type systems	83
J290	Sprue wax patterns for fixed restorations	83
J288	Seat castings	81
J280	Finish and polish fixed restorations	81
J286	Recover castings	81
J293	Wax patterns for fixed restorations	80
J265	Cast conventional gold alloys	80
J263	Burnout wax patterns	80
G181	Perform user maintenance on dental laboratory equipment	80
G159	Construct diagnostic casts, other than orthodontic study casts	80
G173	Disinfect lab equipment or work areas	79
G160	Construct master casts for complete dentures	79
G156	Construct custom impression trays for fixed prosthodontics	78
G189	Repolish prostheses after clinical adjustments	78
G148	Articulate using facebow transfers	78
G196	Weigh and measure dental laboratory materials	78
G161	Construct master casts for RPDs	78
G152	Blockout undercuts on casts	77
E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	76
J287	Recover precious metal grindings or scraps	76
G151	Bead and box impressions	76
J291	Wax metal-ceramic substructure patterns to full contour prior to cutback	75
G166	Construct stone matrices for denture repairs	75
J269	Cutback wax patterns for porcelain or resin-veneer substructures	75
G178	Mark removable appliances with names and social security numbers	75
G144	Add artificial teeth to existing removable partial dentures (RPDs)	75

TABLE A2

ORTHODONTIC APPLIANCE FABRICATOR JOB
(STG40)

TASKS		PERCENT PERFORMING
M347	Fabricate athletic mouthguards	100
G172	Disinfect appliances	100
G159	Construct diagnostic casts, other than orthodontic study casts	100
G158	Construct custom impression trays for removable prosthodontics	85
M348	Fabricate bleaching stents	85
G147	Articulate using arbitrary mounting techniques	85
G152	Blockout undercuts on casts	85
G151	Bead and box impressions	85
G178	Mark removable appliances with names and social security numbers	71
G156	Construct custom impression trays for fixed prosthodontics	71
G182	Prepare impressions	71
G167	Construct working casts for orthodontic appliances	71
G173	Disinfect lab equipment or work areas	71
M361	Fabricate hard nightguards	71
G165	Construct orthodontic study casts	71
E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	71
L331	Fabricate Hawley retainers	57
G181	Perform user maintenance on dental laboratory equipment	57
G179	Mix disinfectant solutions	57
M378	Fabricate surgical stents	57
M359	Fabricate fluoride carriers	57
N384	Don and doff chemical warfare protective equipment	57
N391	Participate in Chemical Warfare Confidence exercises	57
G164	Construct mounting straps	57

TABLE A3

FIXED RESTORATION FABRICATOR JOB
(STG75)

TASKS		PERCENT PERFORMING
J293	Wax patterns for fixed restorations	100
J291	Wax metal-ceramic substructure patterns to full contour prior to cutback	100
J274	Fabricate fixed restorations using microscopes	100
J296	Weigh wax patterns prior to investing	96
J284	Invest wax patterns	92
J269	Cutback wax patterns for porcelain or resin-veneer substructures	88
J290	Sprue wax patterns for fixed restorations	88
G147	Articulate using arbitrary mounting techniques	84
J279	Fabricate surveyed crowns	76
D75	Attend continuing education sessions or courses	48
G173	Disinfect lab equipment or work areas	44
J259	Apply die spacers	44
J273	Fabricate fixed restorations using attachments	44
J267	Construct custom incisal guide tables	44
J295	Wax patterns for onlays	44
J262	Blockout undercuts on dies	44
G181	Perform user maintenance on dental laboratory equipment	40
J292	Wax metal-ceramic substructures without waxing to full contour	40
N388	Load or unload patients on patient transportation vehicles	40

TABLE A4

CROWN FABRICATOR JOB
(STG33)

TASKS		PERCENT PERFORMING
J288	Seat castings	100
J280	Finish and polish fixed restorations	100
J281	Finish substructures for porcelain applications	90
J261	Assemble fixed partial denture components in matrices for soldering	90
J274	Fabricate fixed restorations using microscopes	81
J289	Solder all-metal fixed restorations	81
J285	Presolder metal-ceramic substructures	72
J287	Recover precious metal grindings or scraps	72
J265	Cast conventional gold alloys	63
J266	Cast metal-ceramic alloys	63
N388	Load or unload patients on patient transportation vehicles	63
J279	Fabricate surveyed crowns	63
G173	Disinfect lab equipment or work areas	54
J286	Recover castings	54
N402	Transport litter patients	54
D75	Attend continuing education sessions or courses	54
J284	Invest wax patterns	54
J263	Burnout wax patterns	54
G147	Articulate using arbitrary mounting techniques	54
J262	Blockout undercuts on dies	54
J264	Cast base metal alloys	45
N392	Participate in Medical Red Flag training sessions	45
J269	Cutback wax patterns for porcelain or resin-veneer substructures	45
J270	Deoxidize gold alloy castings	45
J296	Weigh wax patterns prior to investing	45
J290	Sprue wax patterns for fixed restorations	45
A13	Participate in conferences, or workshops	45

TABLE A5

AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB
(STG44)

TASKS		PERCENT PERFORMING
K305	Contour fired porcelains	100
K297	Apply and fire over-glaze to ceramic restorations	100
K316	Fire porcelain	100
K303	Apply opaque porcelains	100
K308	Fabricate crowns with porcelain labial margins	100
K325	Surface stain and color correct ceramic restorations	100
K317	Glaze ceramic restorations mechanically	100
K319	Oxidize substructures	92
K298	Apply dentine and enamel porcelains	92
K301	Apply intrinsic stains	92
K307	Etch porcelain laminate veneers	92
K324	Strip porcelain from metal substructures	92
K315	Fabricate porcelain laminate veneers	84
K299	Apply dentine modifiers	84
K302	Apply opaque modifiers	84
K304	Construct refractory dies or casts	84
A13	Participate in conferences, or workshops	84
K318	Glaze porcelain using autogenous method	76
N388	Load or unload patients on patient transportation vehicles	69
K313	Fabricate Maryland (resin bonded) bridges	61
G181	Perform user maintenance on dental laboratory equipment	61
J280	Finish and polish fixed restorations	61
J281	Finish substructures for porcelain applications	61
N384	Don and doff chemical warfare protective equipment	61
K320	Postsolder metal-ceramic restorations	61
K311	Fabricate In-Ceram restorations	53
G173	Disinfect lab equipment or work areas	53
C69	Write EPRs	53
K306	Etch Maryland bridge retainers	53
N381	Assemble tents	53

TABLE A6

REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB (STG17)

TASKS		PERCENT PERFORMING
I257	Wax and adapt components of RPD framework patterns on refractory casts	89
I237	Blockout and relieve RPD master casts	89
I245	Finish and polish RPD frameworks	78
I251	Seat finished RPD frameworks on duplicate master casts	78
G152	Blockout undercuts on casts	78
I249	Prepare RAPs for RPD frameworks	73
N388	Load or unload patients on patient transportation vehicles	73
I254	Solder wrought-wire clasps to RPD frameworks	63
I236	Bend RPD wrought-wire clasps	63
I239	Duplicate RPD master casts to produce refractory or duplicate master casts	57
I238	Burnout and cast RPD investment molds	57
I252	Solder metal frameworks of RPDs electrically	57
I246	Invest wax patterns for RPDs	52
I244	Fabricate swing-lock RPD frameworks	52
I256	Transfer design from RPD diagnostic to master casts	47
D75	Attend continuing education sessions or courses	47
N402	Transport litter patients	47
E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	42
I241	Fabricate metal denture bases	42
N392	Participate in Medical Red Flag training sessions	42
N381	Assemble tents	42
G143	Adapt artificial teeth to casts and construct indeces for reinforced acrylic pontics (RAPs)	36
N384	Don and doff chemical warfare protective equipment	36
N394	Perform basic cardiac life support	36

TABLE A7

SUPPLY JOB
(STG47)

TASKS		PERCENT PERFORMING
F136	Maintain supply levels	100
F140	Prepare requests for local purchase items	100
F141	Research supply catalogs	100
F123	Establish supply levels	100
F142	Verify supplies received against invoices	100
F138	Order medical supplies using shopping guides	100
F125	Issue supplies	100
F124	Inventory organizational equipment or supplies	100
F134	Maintain custodian action lists	100
F130	Maintain back-order reports	100
F131	Maintain civilian or federal supply catalogs	100
F139	Order nonmedical supplies	100
F128	Maintain AF medical materiel letter (AFMML) files	100
C51	Evaluate dental laboratory supply inventory or storage procedures	85
C49	Evaluate budget requirements	85
F126	Maintain activity issue/turn-in summaries	85
F127	Maintain activity shopping guides	85
F133	Maintain cost-center management folders	85
C52	Evaluate equipment or facility maintenance	71
A19	Prepare equipment justifications	71
A4	Determine requirements for space, personnel, equipment, or supplies	71
F132	Maintain cost-center lists	71
D75	Attend continuing education sessions or courses	71
N402	Transport litter patients	71
A8	Draft budget requirements	57
F135	Maintain property custody authority/custody receipt listings (CA/CRLs)	57
F137	Order medical supplies using medical logistics (MEDLOG) computer system	57
B31	Direct maintenance or utilization of equipment or facilities	57
E114	Maintain resource protection folders	57
B25	Conduct briefings	57

TABLE A8

DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB (STG35)

TASKS		PERCENT PERFORMING
C47	Conduct performance feedback worksheet (PFW) evaluation sessions	100
B39	Interpret policies, directives, or procedures for subordinates	95
B27	Counsel personnel on personal or military-related matters	95
A22	Schedule personnel for leaves, passes, or temporary duty (TDY)	95
B38	Improve work methods or procedures	90
C58	Evaluate quality control procedures	90
A16	Plan or schedule work assignments or priorities	90
C69	Write EPRs	90
C53	Evaluate individuals for promotion, demotion, reclassification, or special awards	90
C71	Write recommendations for awards or decorations	90
C59	Evaluate quality of finished prostheses	85
C56	Evaluate personnel for compliance with performance standards	85
C46	Analyze workload requirements	85
D75	Attend continuing education sessions or courses	85
A13	Participate in conferences, or workshops	85
E109	Maintain counseling forms	85
B26	Conduct supervisory orientations of newly assigned personnel	85
B43	Supervise Dental Laboratory Specialists (AFSC 98250)	80
C63	Evaluate work schedules	80
A9	Establish laboratory quality fabrication standards	80
A1	Assign personnel to duty positions	80
A4	Determine requirements for space, personnel, equipment, or supplies	76
E104	File or review DD Forms 2322 (Dental Laboratory Work Authorization)	71
B40	Respond to patient or staff complaints	71
B44	Supervise Dental Laboratory Technicians (AFSC 98270)	66
D83	Counsel trainees on training progress	66
A6	Develop management objectives	66
E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	66
D74	Assign on-the-job training (OJT) trainers	66
C51	Evaluate dental laboratory supply inventory or storage procedures	66

APPENDIX B

LISTING OF MODULES AND TASK STATEMENTS

THIS PAGE INTENTIONALLY LEFT BLANK

These Task Modules (TMs) were developed in order to organize and summarize the extensive task information for this specialty. The TMs were derived by statistical clustering of the tasks in terms of which tasks are performed by the same incumbents. For example, if an individual performs one documentation task, the probability is very high that he or she also will perform other documentation tasks. Thus, the group of documentation tasks can be considered a "natural group" of associated or related tasks (see TM 0001 below). The statistical clustering generally approximates these "natural groupings. "

The title of each TM is our best estimate as to the generic subject content of the group of tasks. The TMs are useful for organizing the task data into meaningful units and as a way to concisely summarize the extensive job data. However, TMs are only one way to organize the information. Other strategies may also be valid.

Listing of Module Statements

0001	ST0123	Dental Lab Documentation
0002	ST0187	General Lab Maintenance
0003	ST0199	Fixed Restoration Fabrication
0004	ST0173	Fixed Restoration Soldering
0005	ST0213	Precious Metal Duties
0006	ST0246	Ceramic and Porcelain Duties
0007	ST0145	Wax Pattern Duties
0008	ST0251	Orthodontic Appliance Fabrication
0009	ST0298	Denture Repair and Fabrication
0010	ST0196	Denture Tooth Arrangement and Cast Remounting
0011	ST0102	Medical Readiness Activities
0012	ST0079	Denture Base Fabrication
0013	ST0186	Workcenter Management
0014	ST0151	Quality Assurance Activities
0015	ST0116	Supervision Duties
0016	ST0144	Safety/Security Activities
0017	ST0130	Inspection and Evaluation
0018	ST0235	Supply Activities
0019	ST0178	Financial Management
0020	ST0274	Financial Documentation
0021	ST0103	First-Line Supervisor Duties
0022	ST0080	Ceramic Fabrication
0023	ST0074	Field Medical Readiness Activities
0024	ST0082	Civilian Management
0025	ST0149	Orthodontic Fabrication
0026	ST0110	Orthopedic Metal Bands and Wire Duties
0027	ST0113	Retainer Fabrication
0028	ST0091	Complete Denture Base Fabrication
0029	ST0200	Training Program Managers
0030	ST0162	Technical School Instructor Duties
0031	ST0073	Removable Partial Denture Fabrication
0032	ST0072	Metal Denture Base Fabrication

0033 ST0094 Dicor Substructures and Restorations
0034 ST0114 Plastic Surgery Applicance Fabrication
0035 Tasks not referenced

Listing of Task Statements

0001	ST0123	Dental Lab Documentation
1	A13	Participate in conferences or workshops
2	B38	Improve work methods or procedures
3	D75	Attend continuing education sessions or courses
4	E104	File or review DD Forms 2322 (Dental Laboratory Work Authorization)
5	E108	Maintain case logbooks
6	E116	Maintain timesheets
7	E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)

0002	ST0187	General Lab Maintenance
1	G152	Blockout undercuts on casts
2	G172	Disinfect appliances
3	G173	Disinfect lab equipment or work areas
4	G181	Perform user maintenance on dental laboratory equipment
5	G196	Weigh and measure dental laboratory materials

0003	ST0199	Fixed Restoration Fabrication
1	G147	Articulate using arbitrary mounting techniques
2	J258	Apply die hardeners
3	J259	Apply die spacers
4	J262	Blockout undercuts on dies
5	J263	Burnout wax patterns
6	J265	Cast conventional gold alloys
7	J266	Cast metal-ceramic alloys
8	J269	Cutback wax patterns for porcelain or resin-veneer substructures
9	J270	Deoxidize gold alloy castings
10	J274	Fabricate fixed restorations using microscopes
11	J279	Fabricate surveyed crowns
12	J280	Finish and polish fixed restorations
13	J281	Finish substructures for porcelain applications
14	J284	Invest wax patterns
15	J286	Recover castings
16	J287	Recover precious metal grindings or scraps
17	J288	Seat castings
18	J290	Sprue wax patterns for fixed restorations

0003	ST0199	Fixed Restoration Fabrication (Continued)
19	J291	Wax metal-ceramic substructure patterns to full contour prior to cutback
20	J293	Wax patterns for fixed restorations
21	J296	Weigh wax patterns prior to investing

0004	ST0173	Fixed Restoration Soldering
1	J260	Assemble fixed partial denture components for soldering using acrylic resin
2	J261	Assemble fixed partial denture components in matrices for soldering
3	J264	Cast base metal alloys
4	J285	Presolder metal-ceramic substructures
5	J289	Solder all-metal fixed restorations

0005	ST0213	Precious Metal Duties
1	E100	Annotate filing cabinet or safe security forms
2	E105	Lock up precious metals and alloys
3	E110	Maintain dental registers of precious metals and alloys
4	J275	Fabricate post and cores using direct pattern technique
5	J276	Fabricate post and cores using indirect pattern technique

0006	ST0246	Ceramic and Porcelain Duties
1	K297	Apply and fire over-glaze to ceramic restorations
2	K298	Apply dentine and enamel porcelains
3	K299	Apply dentine modifiers
4	K301	Apply intrinsic stains
5	K302	Apply opaque modifiers
6	K303	Apply opaque porcelains
7	K305	Contour fired porcelains
8	K308	Fabricate crowns with porcelain labial margins
9	K316	Fire porcelain
10	K317	Glaze ceramic restorations mechanically
11	K318	Glaze porcelain using autogenous method
12	K319	Oxidize substructures
13	K324	Strip porcelain from metal substructures
14	K325	Surface stain and color correct ceramic restorations

0007	ST0145	Wax Pattern Duties
1	J267	Construct custom incisal guide tables
2	J273	Fabricate fixed restorations using attachments
3	J292	Wax metal-ceramic substructures without waxing to full contour
4	J294	Wax patterns for inlays
5	J295	Wax patterns for onlays

0008	ST0251	Orthodontic Appliance Fabrication
1	G148	Articulate using facebow transfers
2	G151	Bead and box impressions
3	G153	Bulk trim dies
4	G156	Construct custom impression trays for fixed prosthodontics
5	G158	Construct custom impression trays for removable prosthodontics
6	G159	Construct diagnostic casts, other than orthodontic study casts
7	G160	Construct master casts for complete dentures
8	G161	Construct master casts for RPDs
9	G167	Construct working casts for orthodontic appliances
10	G168	Construct working casts with removable dies using Pindex-type systems
11	G178	Mark removable appliances with names and social security numbers
12	G182	Prepare impressions
13	G183	Prepare saturated calcium sulphate dihydrate solutions (SDSs)
14	G184	Prepare slurry water
15	G189	Repolish prostheses after clinical adjustments
16	G191	Soak casts in SDS
17	M347	Fabricate athletic mouthguards
18	M361	Fabricate hard nightguards

0009	ST0298	Denture Repair and Fabrication
1	G144	Add artificial teeth to existing removable partial dentures (RPDs)
2	G155	Construct casts for denture repairs
3	G166	Construct stone matrices for denture repairs
4	G186	Repair complete or partial denture bases, except replacing broken or missing teeth
5	G188	Replace broken or missing artificial teeth on complete or partial denture bases
6	H198	Arrange artificial teeth for balanced occlusions
7	H199	Arrange artificial teeth for cross-bite occlusions
8	H201	Arrange artificial teeth for monoplane occlusions
9	H202	Arrange artificial teeth for RPDs
10	H203	Arrange artificial teeth opposing natural dentitions
11	H204	Boil out wax from molds
12	H210	Deflask complete dentures or RPDs
13	H215	Fabricate immediate complete dentures or RPDs
14	H216	Fabricate interim RPDs
15	H220	Fabricate record bases and occlusion rims
16	H223	Finish and polish denture bases
17	H225	Flask complete dentures
18	H226	Flask RPDs
19	H227	Pack and cure complete denture molds
20	H228	Perform selective grinding procedures
21	H231	Reline complete dentures or RPDs
22	H232	Remount dentures or RPDs
23	H233	Select artificial teeth
24	H234	Split pack and cure RPD denture molds
25	H235	Wax-up denture bases for processing

0010	ST0196	Denture Tooth Arrangement and Cast Remounting
1	G185	Rebase complete dentures
2	H200	Arrange artificial teeth for lingualized occlusions
3	H205	Characterize complete denture bases or RPDs
4	H206	Characterize tooth arrangements
5	H208	Construct remount casts
6	H209	Construct remounting indices
7	H217	Fabricate overdentures for conventional abutments
8	H222	Fabricate teeth for RPDs using tooth-shaded acrylic

0011	ST0102	Medical Readiness Activities
1	N381	Assemble tents
2	N384	Don and doff chemical warfare protective equipment
3	N385	Identify chemical warfare agents
4	N388	Load or unload patients on patient transportation vehicles
5	N391	Participate in Chemical Warfare Confidence exercises
6	N392	Participate in Medical Red Flag training sessions
7	N393	Perform area security duties
8	N394	Perform basic cardiac life support
9	N395	Perform chemical warfare decontamination procedures
10	N402	Transport litter patients

0012	ST0079	Denture Base Fabrication
1	G157	Construct custom impression trays for implants
2	H197	Adapt prefabricated gingival or palatal patterns to the wax-up of complete denture or RPD bases
3	H207	Color-modify denture bases
4	H224	Flask complete denture or RPD base wax-ups using insulating paste, such as Dent-Kote

0013	ST0186	Workcenter Management
1	B26	Conduct supervisory orientations of newly assigned personnel
2	B27	Counsel personnel on personal or military-related matters
3	B39	Interpret policies, directives, or procedures for subordinates
4	B41	Supervise Apprentice Dental Laboratory Specialists (Air Force Specialty Code (AFSC) 98230)
5	B43	Supervise Dental Laboratory Specialists (AFSC 98250)
6	C46	Analyze workload requirements
7	C47	Conduct performance feedback worksheet (PFW) evaluation sessions
8	C53	Evaluate individuals for promotion, demotion, reclassification, or special awards
9	C56	Evaluate personnel for compliance with performance standards
10	C58	Evaluate quality control procedures
11	C59	Evaluate quality of finished prostheses

0013	ST0186	Workcenter Management (Continued)
12	C69	Write EPRs
13	D79	Conduct OJT
14	D83	Counsel trainees on training progress

0014	ST0151	Quality Assurance Activities
1	A1	Assign personnel to duty positions
2	A6	Develop management objectives
3	A9	Establish laboratory quality fabrication standards
4	A12	Establish work methods, production controls, or inspection procedures
5	A16	Plan or schedule work assignments or priorities
6	A22	Schedule personnel for leaves, passes, or temporary duty (TDY)
7	B32	Implement continuing education programs or procedures
8	B37	Implement self-inspection programs or procedures
9	B40	Respond to patient or staff complaints
10	C48	Evaluate administrative files or procedures
11	C50	Evaluate continuing education programs
12	C63	Evaluate work schedules
13	C71	Write recommendations for awards or decorations
14	E106	Maintain administrative files
15	E109	Maintain counseling forms
16	E111	Maintain local quality assurance forms
17	E120	Verify accuracy of Base Dental Service Reports (BDSRs)
18	F122	Assign personnel to receive supplies or precious metals

0015	ST0116	Supervision Duties
1	A2	Assign sponsors for newly assigned personnel
2	A18	Plan staff meetings, conferences, or workshops
3	A23	Write job descriptions
4	B42	Supervise civilians
5	B44	Supervise Dental Laboratory Technicians (AFSC 98270)
6	C65	Indorse enlisted performance reports (EPRs)
7	D74	Assign on-the-job training (OJT) trainers

0016	ST0144	Safety/Security Activities
1	A17	Plan safety programs
2	B29	Direct hazardous chemicals programs
3	B34	Implement hazardous chemicals programs or procedures
4	B36	Implement safety programs or procedures
5	C60	Evaluate resource protection programs
6	C61	Evaluate safety programs
7	C67	Perform safety inspections

0017	ST0130	Inspection and Evaluation
1	B30	Direct maintenance of administrative or technical files
2	C54	Evaluate inspection report findings
3	C62	Evaluate suggestions
4	E107	Maintain administrative publications

0018	ST0235	Supply Activities
1	F123	Establish supply levels
2	F124	Inventory organizational equipment or supplies
3	F125	Issue supplies
4	F126	Maintain activity issue/turn-in summaries
5	F127	Maintain activity shopping guides
6	F130	Maintain back-order reports
7	F131	Maintain civilian or federal supply catalogs
8	F136	Maintain supply levels
9	F138	Order medical supplies using shopping guides
10	F139	Order nonmedical supplies
11	F140	Prepare requests for local purchase items
12	F141	Research supply catalogs
13	F142	Verify supplies received against invoices

0019	ST0178	Financial Management
1	A8	Draft budget requirements
2	B31	Direct maintenance or utilization of equipment or facilities
3	C49	Evaluate budget requirements
4	C52	Evaluate equipment or facility maintenance

0020	ST0274	Financial Documentation
1	F128	Maintain AF medical materiel letter (AFMML) files
2	F132	Maintain cost-center lists
3	F133	Maintain cost-center management folders
4	F134	Maintain custodian action lists

0021	ST0103	First-Line Supervisor Duties
1	B33	Implement cost-reduction programs or procedures
2	D96	Select individuals for specialized training
3	E103	Complete quarterly Dental Service Management Reports
4	E112	Maintain manpower authorization documents

0022	ST0080	Ceramic Fabrication
1	K304	Construct refractory dies or casts
2	K306	Etch Maryland bridge retainers
3	K307	Etch porcelain laminate veneers
4	K311	Fabricate In-Ceram restorations
5	K315	Fabricate porcelain laminate veneers

0023	ST0074	Medical Readiness Activities
1	N382	Count and record pulses
2	N383	Count and record respirations
3	N386	Interpret compasses
4	N387	Interpret maps
5	N390	Operate field communications equipment
6	N396	Perform field sanitation and hygiene procedures
7	N401	Read and record blood pressures
8	N403	Treat burns
9	N404	Treat fractures
10	N405	Treat hemorrhages
11	N406	Treat shock
12	N407	Treat wounds

0024	ST0082	Civilian Management
1	C64	Indorse civilian performance appraisals
2	C68	Write civilian performance appraisals
3	E99	Annotate civilian timesheets
4	E115	Maintain study reference files

0025	ST0149	Orthodontic Fabrication
1	L327	Fabricate fixed rapid palatal expansion appliances
2	L328	Fabricate fixed space maintainers
3	L329	Fabricate fixed transpalatal appliances
4	L332	Fabricate inclined bite planes
5	L333	Fabricate lingual arch appliances
6	L334	Fabricate Nance appliances
7	L335	Fabricate removable palatal expansion appliances
8	L336	Fabricate tongue thrust appliances
9	L345	Section orthodontic casts and reposition segments for ideal occlusions
10	L346	Solder orthodontic appliances, other than for repair

0026	ST0110	Orthopedic Metal Bands and Wire Duties
1	L338	Fabricate W-arch appliances
2	L339	Heat treat wires to harden them
3	L340	Heat treat wires to soften them
4	L343	Reposition metal bands in alginate impressions

0027	ST0113	Retainer Fabrication
1	L326	Fabricate bionators
2	L330	Fabricate Frankel appliances
3	L337	Fabricate Tru-tain retainers
4	L344	Reseat metal bands loosened during shipments

0028	ST0091	Complete Denture Base Fabrication
1	H211	Fabricate complete denture bases or RPDs retained with dental implant devices
2	H212	Fabricate complete dentures or RPDs using cutter bars
3	H213	Fabricate complete dentures or RPDs using metal occlusals
4	H218	Fabricate overdentures using attachments
5	H219	Fabricate overdentures using metal mini-bases

0029	ST0200	Training Program Managers
1	D84	Determine training requirements, such as OJT, CPR, or resident course requirements
2	D89	Direct or implement training programs
3	D90	Evaluate performance of instructors or trainees
4	D91	Evaluate training methods, techniques, or programs

0030	ST0102	Technical School Instructor Duties
1	D73	Administer or score tests
2	D80	Conduct resident course classroom training
3	D86	Develop performance tests
4	D87	Develop resident course curriculum materials
5	D94	Prepare lesson plans
6	D97	Write test questions

0031	ST0073	Removable Partial Denture Fabrication
1	I237	Blockout and relieve RPD master casts
2	I238	Burnout and cast RPD investment molds
3	I239	Duplicate RPD master casts to produce refractory or duplicate master casts
4	I245	Finish and polish RPD frameworks
5	I246	Invest wax patterns for RPDs
6	I248	Prepare blockout wax
7	I249	Prepare RAPs for RPD frameworks
8	I251	Seat finished RPD frameworks on duplicate master casts

0031	ST0073	Removable Partial Denture Fabrication (Continued)
9	I252	Solder metal frameworks of RPDs electrically
10	I254	Solder wrought-wire clasps to RPD frameworks
11	I255	Survey and design casts for RPD frameworks
12	I256	Transfer design from RPD diagnostic to master casts
13	I257	Wax and adapt components of RPD framework patterns on refractory casts

0032	ST0072	Metal Denture Base Fabrication
1	I241	Fabricate metal denture bases
2	I242	Fabricate metal mini-bases for overdentures
3	I243	Fabricate RPD frameworks using precision attachments
4	I244	Fabricate swing-lock RPD frameworks
5	I247	Perform RPD diagnostic wax-ups and cutbacks for light-cured resin
6	I250	Prepare tube teeth for RPD frameworks

0033	ST0094	Dicor Substructures and Restorations
1	K300	Apply Dicor-Plus porcelains to Dicor substructures
2	K309	Fabricate Dicor restorations
3	K310	Fabricate Dicor substructures
4	K314	Fabricate porcelain jacket crowns
5	K322	Shade Dicor restorations

0034	ST0114	Plastic Surgery Appliance Fabrication
1	M365	Fabricate nasal stents
2	M368	Fabricate palatal lifts
3	M372	Fabricate plastic surgery silicone implants
4	M374	Fabricate radiation stents